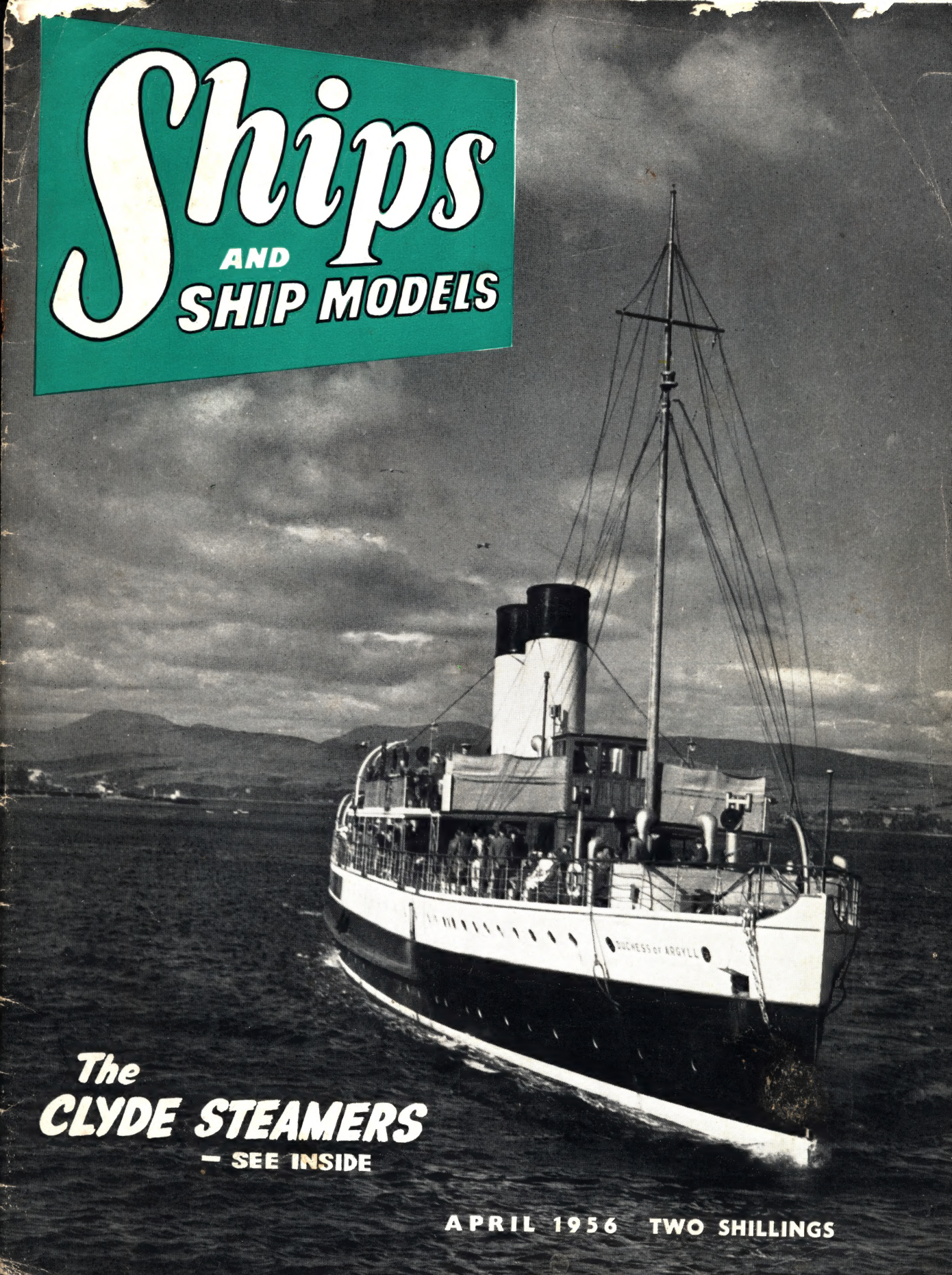
Ships AND SHIP MODELS



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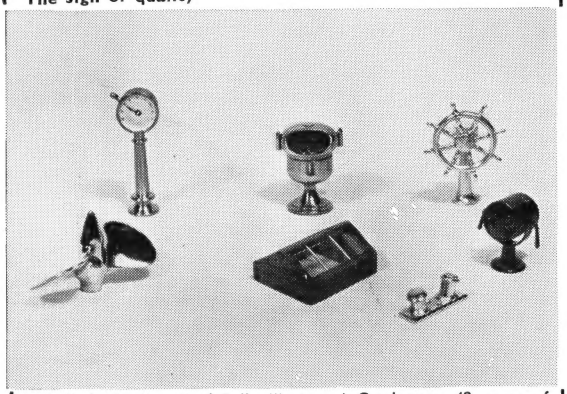

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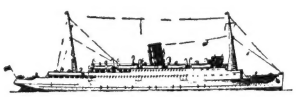

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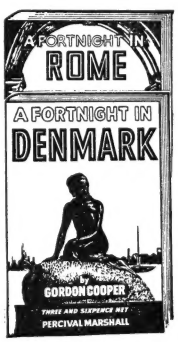

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Ships AND SHIP MODELS

INCORPORATING MODEL SHIPS & POWER BOATS

Vol. IX. No. 99. APRIL 1956

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Owing to recent troubles in the printing industry, this issue is several days late. We regret the delay and hope that next month's issue will be on sale at the normal time.

THE SHIP'S LOG

LOVERS OF THE spritsail barge will be pleased to know that these barges will be racing again this year. The dates fixed are Tuesday, June 19, for the Thames race, and Thursday, June 21, for the Medway event.

It is expected that at least five or six barges will be competing, and it is good to hear that Messrs. F. T. Everard & Sons are re-fitting their pre-war champion *Veronica* for the races. The course for the Thames race will be from the Lower Hope to the North Oaze buoy and back to Gravesend, the same as last year. M.V. *Royal Sovereign* has been chartered to follow both events.

A YACHT MUSEUM FOR COWES

A PROPOSAL IS on foot to preserve the old sail loft and premises used for so many years by Ratsay and Lapthorn at Cowes, as a yachting museum and instruction centre. On the inaugural committee are M.P.s, well-known yachtsmen, directors of shipping companies, and many leading yachtsmen have promised support. Tillers, gear and fittings from famous racing yachts of the past, and other valuable relics will be on view, with models of vessels of all kinds. There will also be a gallery of marine paintings and drawings.

In conjunction with the museum, the urgent need in Cowes for a clubhouse for youngsters will be met by fitting up part of the premises as a dormy house with changing rooms, mess-room and other useful facilities. Alongside the part of the buildings that juts out over the water it is intended that craft of historical interest will be kept afloat for inspection by the public, on the lines of those to be seen at the Zuider Zee Maritime Museum at Enkhuisen in Holland.

NEW SERIES OF MODEL YACHT DESIGNS

READERS WILL BE interested in the new 10-rater design published in this issue. Mr. Tucker is probably the leading model yacht designer and in this drawing he completes a series which illustrates very well the modern tendency. *Water-Sprite*, a 31 in. R Class which was published in April of last year, and the M Class *Water-Nymph* which followed in July, have slightly flared bows. When overall length is restricted, as in these two classes, the forward overhang is inevitably kept to a minimum and the extra buoyancy of the flared bow should prevent the tendency to bore which is found with this type. The A class *Water-Witch*, which appeared in the December issue, is a heavy, powerful boat. The long L.W.L. and the slender hull lines of the 10-rater *Water-Fairy* in this issue will produce a boat which, in good hands, should easily reach championship class.

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SAFETY

Why do we, in the middle of the twentieth century, continue to lose ships and men so tragically? In a moving plea to reduce loss of life at sea ALAN VILLIERS urges that "well proven inflatable rafts be carried as statutory life-saving equipment"

I MUST ADMIT that, when I heard on our radio at home about the loss of the Hain Line's fine vessel *Tresillian* with over half her crew, I was shocked. Here was a modern, powerful vessel, homeward-bound on an ordinary North Atlantic voyage with a full cargo of grain—and she founders almost within sight of her destination, right in the shipping lanes and almost within sight of the coast of Ireland; her master and all her deck officers and more than enough of the crew go down with her.

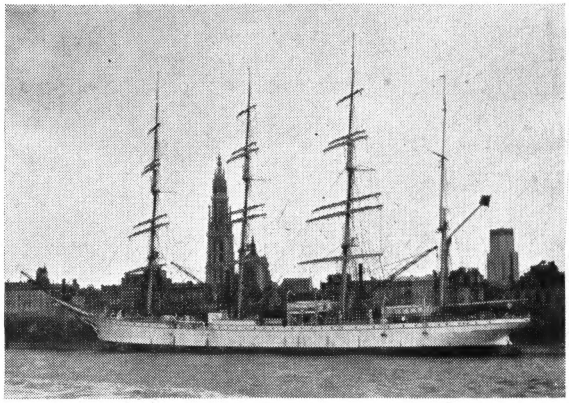
I don't know why I should have been shocked so much. Perhaps we don't expect this sort of thing to happen in these days. Perhaps we all take our Merchant Navy, and the risks it must constantly run in its age-long fight against the sea, too much for granted. Or perhaps we forget that great ships can still be overwhelmed, if a sufficient array of adverse circumstances is brought against them. Perhaps we forget that an ordinary ship's lifeboat in its heavy steel davits is a cumbrous and awkward thing when it must be launched in a gale of wind from a ship without power and dangerously listed. Perhaps we forget that, if things get so bad that lifeboats have to be used, the bigger the ships get, the higher are the boats out of the water and the more of the rolling, wallowing hull there is for them to smash against while the attempt is being made to launch them.

Atlantic's toll of ships

I was not the only one shocked by the *Tresillian* case. I wager the whole shipping industry was. In the old days, one accepted almost as a matter of course that the fall and winter gales of the North Atlantic would take their toll of west-bound ships. Ships of incredible smallness used habitually to engage in the Western Ocean trade, and it was hard. . . . Enlightened ministries everywhere have done all they can to bring an end to those days—our own, for instance, has been outstanding in promoting safety measures for a hundred years. As soon as the loss of the *Tresillian* became known, the proper machinery was set in motion to find out why. Here was a ship in a trade carried on with practically the same regularity as an ordinary delivery by motor-lorry down the Banbury Road—the safe haulage of bulk grain from Canada to the United Kingdom. Yet she lists; she is stopped and hove-to; she cannot take it. Two of her boats go with her list—those on the listed-down side—and the others, on the lifted-up side, cannot properly be launched. The ship founders, the crew die—all but a dozen or so of the 40 of them—though rescue

Above left: A sea breaking viciously over the deck of a modern trawler

Below: The "Admiral Karpfanger"—one of the famous big sailing ships which disappeared mysteriously



AT SEA

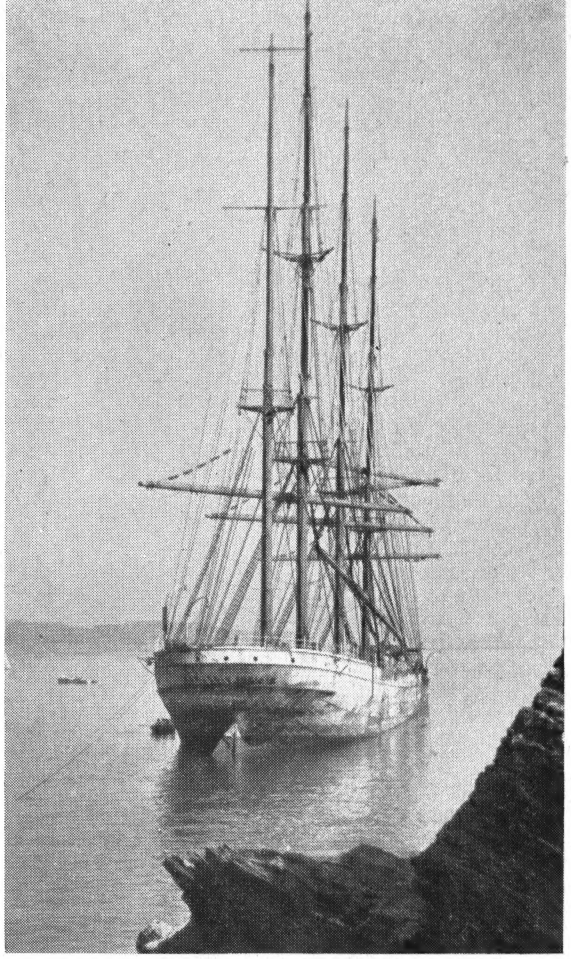
was at hand. There is an exhaustive and lengthy inquiry made into such cases today, rare as they are (their rarity is a tribute to the effectiveness of the measures in force), and the *Tresillian* case was fully dealt with by the competent authority, which has issued its report.

But the shock remains. Like the shock, too, when one heard of the awful losses of the good Hull trawlers *Lorella* and *Roderigo*, which were iced up and rolled over in a so-called " black frost " to the north of Iceland at the end of January last year. It was not black frost but a combination of awful weather—heavy and a long continued north-east gale, tremendous seas and severe icing conditions—which sank them. The *Lorella* and the *Roderigo* were part of the splendid fleet of big, distant-waters trawlers which Hull sends to sea. They are used to Arctic conditions. They are used to all the toughness the bitter northern seas can throw against them, for they must fish summer and winter alike.

Went down as they spoke

One is well aware of the ferocity of the elements between the north of Iceland and the coast of Greenland in the autumn and winter—listen to almost any B.B.C. weather forecast—but one does not expect good trawlers to be lost there, in the open sea. There will always be odd rock-striking casualties. But the icing-up and rolling over of these two ships, while their respected and highly experienced masters were still speaking with quiet voices over the radio telephones as their ships and they went to their deaths, was a profound shock to more than the fishing communities. I attended the subsequent Ministry of Transport inquiry into the incident. It was a tragic business and, as far as I could make out, it could happen again if ever trawlers were similarly caught out and had to go on " dodging " for day after day towards the north into an ice-laden gale. A trawler " dodging " must head into the sea. A sea headed into breaks aboard. Breaking sea in freezing conditions leaves frozen spray, and frozen spray grows, if it cannot be removed. A ship with her upper-works iced-up becomes sluggish and must increase speed to keep steerage way. To increase speed brings more sea and spray, which brings more ice, which means more speed, which, in turn, means again even heavier seas aboard—and more ice, threatened stability, and, in the end, loss of stability altogether. Able men are coping with this problem : but it still exists.

It is as I say a tragedy when ships are lost in this way—as after that great January gale of a couple of years ago, when no fewer than nine ships were posted missing, eight of them on the same day. It is a tragedy, too, when a big ship like the German ore-carrying motorship *Melanie Schulte* disappears on her second voyage or the Argentinian *General San Martin*—the largest merchantman ever to go missing



The " Herzogin Cecilie " ashore near Salcombe, Devon

outside war years—loses herself on a simple coasting passage between Buenos Aires and Chile, leaving no trace at all. When things like that happen seamen begin to recall such cases as the tramp steamer *Hopestar*, and the *Samkey*, the Anglo-Australian, the converted American L.S.T. *Southern Districts* and —going back a bit—the famous big sailing ships *Admiral Karpfanger* and the Danish five-masted school ship *Kobenhavn*. All these ships met unknown fates.

One missing per year

On the average one such large ship still goes missing each year, which is not much when one considers just how many ships there are. The amazing thing is that they still contrive somehow to disappear without a trace, without a radio call, without a survivor (though they have boats, flares, life-jackets and everything else an energetic and determined Ministry can think up for their greater safety), and despite the fact they are using in these days regular shipping lanes. In the old days, when sailing ships carried on a good deal of the world's sea-borne trade, ships wandered everywhere and they could not use lanes. Nowadays, powered vessels must navigate with precision upon the shortest possible routes. If a ship gets into trouble

one would think she could hardly be far from her fellows. Yet all those nine ships, missing since 1 February 1953, were in narrow waters, some in and near the English Channel, others in the North Sea. One—a little Hollander—came out of Par and passed Prawle Point, and then went into oblivion. Another —a Baltic-type Swede with a full load of pit-props as well as the usual deck cargo—went down in the middle of the North Sea. Come to think of it, there are a good many ships missing in the North Sea and English Channel.

In bad visibility, in a gale of wind, a small ship with her hatches stove can go down like a stone even within sight of her destination, and give her people no time to rush for the radio telephone. A big ship can roll over, too, as the *Samkey* must have done, or split open and founder, or be completely overwhelmed, as the old battleship *Sao Paulo* must have been when she was being towed home for scrap from Brazil four years or so ago. Hatches may still be vulnerable, cargo can still shift. . . .

Price of safety

It is a matter for congratulation that so few ships do meet any of these fates. But full and successful elimination lies in careful planning and supervision, in forethought and care all down the line—on government levels, in the shipyards and the insurance offices, in the classification societies and the organisations of seafarers of all kinds, officers and men, in the docks and the ports of the world. The price of safety is eternal vigilance. One is reminded of all this by—among other things—the recent findings of the Court of Inquiry into the case of the lost *Tresillian* and the publication by H.M. Stationery Office of an excellent booklet called *Seafarers and Their Ships*. This was prepared by the Ministry of Transport and Civil Aviation, and sells at 3s. 6d. Everyone interested at all in ships or the story of British shipping ought to have a copy. Sir Gilmour Jenkins points out, in a foreword, that it is not meant to cover the whole great subject—as its title seems to indicate. It gives, he says, something of the story of the Marine Department and its work of administering the Merchant Shipping Acts at headquarters and in the ports. That, indeed, it does. It points out clearly how the bad old days of crimps and sailors' boarding houses, of too readily accepted wrecks, of sometimes overloaded and frequently undermanned and poorly maintained ships, have given way to progress . . . when ships and seamen are as highly organised as possible into a smooth-running and—on the whole—reasonably safe machine, which is vital both to the nation's bodily welfare and financial health.

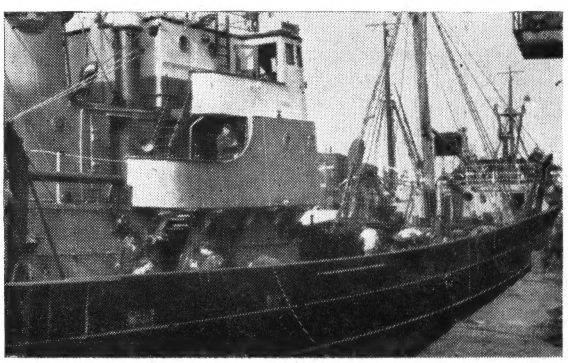
Ships used to be wrecked by the hundred and there was evidence that some at least of those ships were badly built. It was a long story, and a long job, to correct things: but it was tackled resolutely by far-sighted and courageous men. Some of the greatest of our shipping lines set their own standards, long before there was any law requiring them to be so circumspect —the great Cunard Line, for example, pioneered steaming lights, westbound and eastbound trans-atlantic liner lanes, and many other safety measures which are now taken for granted. Cunard's record for safety at sea was magnificent when some others were—well, definitely not. The P. & O. Company, too, did noble pioneer work in this field. So did Alfred Holt's Blue Funnel Line, always noteworthy for the strength and superb seaworthiness of the ships it builds: and there were plenty of others. It was a shipowner named Hall who started the agitation for a proper load-line which Plimsoll took up. Plimsoll was in Parliament where he could make more noise, and he went on making appropriate noises on the subject until his name was indissolubly associated with not only the load-line, but the safety of ships in general. There were plenty of others equally as keen on the subject but perhaps not so vociferous—which is not to detract from Plimsoll's work.

As conditions of safe seafaring steadily improved, so have the living conditions for men in the ships. If you would like to see just how much, go down to Greenwich and look at the tiny hutch of a wooden house built on the decks of the old clipper *Cutty Sark* to hold all her foremast hands, and then go aboard a Watts Watts tramp or any oil tanker and cargo liner under the British, American, Norwegian, Swedish, Danish, German and Dutch flags and see the single and two-berth cabins, the not uncommon cafeterias and the generally comfortable and always adequate accommodation for all hands—from master to the youngest mess boy.

Work still for safety pioneer

The hard old days and their appalling conditions are gone, and good riddance to them. But there is some good work still for the safety pioneer to do, particularly in the matter of boats. Maybe it would make sense to ease international regulations to the extent of permitting well proven inflatable rafts (of the self-righting and sheltered type) to be carried as statutory life-saving equipment instead of always having a full quota of, perhaps, cumbersome and awkward boats that cannot be got away. ⚓

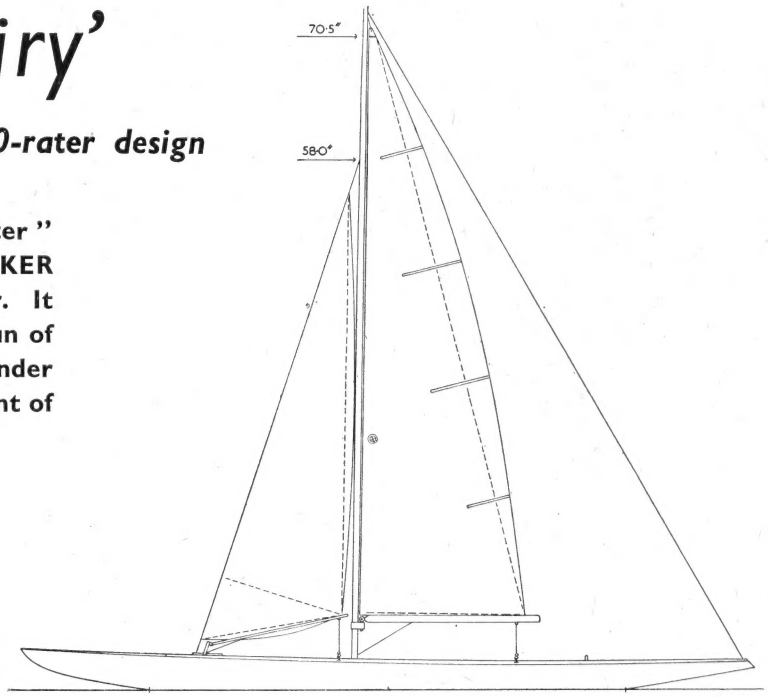
A typical present-day Arctic trawler



'Water-Fairy'

. . . a new 10-rater design

This is the fourth of the " Water " series of designs by H .B. TUCKER published during the past year. It is a little out of the general run of its class and, with its long slender lines, should give a good account of itself in racing



THE LENGTH AND sail area rule was formulated by Dixon Kemp in 1887, and adopted by model yachtsmen soon after. In 1896 it was superseded in full-size yachts by the first linear rating rule. But the Kemp rule remained popular with model yachtsmen, and when the Model Yacht Racing Association was formed in 1911, its principal class was the 10-rater. The association was re-formed after the first world war in 1922 as the Model Yachting Association, and the 10-rater was retained as its principal class. Other classes have been adopted since that date, but despite the fact that the rating rule is now almost 70 years old, the 10-rater class maintains its popularity with model yachtsmen.

Nevertheless, great changes have taken place during this long period, and the 10-rater of today is a very different craft to her sisters of earlier decades. How great this difference is can best be judged by comparing the principal dimensions of typical boats. As a good example of an early 10-rater, let us take the celebrated *XPDNC*, designed by Mr. W. J. Daniels, and built about 1907. In her day this little boat was almost invincible. She was a beamy, flat bottomed, hard bilged, lightweight scow with a rather squat gunter-lug sail plan of low aspect ratio. Her main dimensions were: L.O.A. 60.0 in., L.W.L. 36.0 in., beam 12.0 in., draught 9.0 in., S.A. 1,666 sq. in., displacement 15 lb. (including 9 lb. lead).

Boats became somewhat larger as time progressed, and by about 1933 a large 10-rater had an L.W.L. of 40.0 in. or even 42.0 in., and the displacement had risen to 21 lb., or in extreme cases to 22 lb. In that year I designed *Evadne*, and published her design in *Marine Models*, of which I was editor. She was such an innovation that nobody took her seriously until Mr. A. E. Matthews of the M.Y.S.A. (Kensington) built her under the name of *Vivix*. She proved a most successful boat and, in her first season after being third in her first race, won eight of ten successive races including a number of inter-club events. *Evadne* was a long, rather narrow, double-ender, with a moderately high Bermuda rig, the dimensions being: L.O.A. 74.8 in., L.W.L. 50.0 in., beam 9.6 in., draught 11.0 in., S.A. 1,200 sq. in., displacement 22 lb. This boat is notable as being the first of the modern long waterline 10s.

However, since that date 10-raters have again gradually increased in waterline length and displacement, and boats have been tried up to 60.0 in. L.W.L. and about 35 lb. displacement. These extreme figures have proved somewhat too much for producing an all-round boat, and the class appears to have settled down to a waterline of 55-56 in. and a displacement of 30-32 lb. Many skippers like models with great L.O.A., and as a result many designers have produced designs with forced ends and sharp turns about the midship section. This, coupled with the distribution of displacement entailed, is liable to produce a boat which has long ends but does not use them. Nevertheless, if really well designed, a boat with long overhangs can have a very great sailing length when heeled to her best sailing angle.

The present design was produced to meet this demand for a long boat, and in a smart sailing breeze she should have a sailing length of 70.0 in. or possibly an inch or two over. This means that she should sail a longer boat than most A-class yachts. With the designed rig, which is not excessively high, she should carry her sail well, while the long after buttock lines should ensure her planing very easily. As a matter of interest and for comparison with *XPDNC* and *Evadne*, her dimensions are appended: L.O.A. 85.0 in., L.W.L. 55.0 in., beam 12⅝ in., draught 12.0 in., S.A. 1,086 sq. in., displacement 30.5 lb.

SAIL AREA

Fore triangle $\frac{58 \times 18.0}{2}$	= 522		
Less 15 per cent.	= 78	=	444
Mainsail $\frac{67.5 \times 19.0}{2}$		=	642
			1,086

Spinnaker luff 57.0 leach 59.0 foot 38.0.

SMALL SUITS

	luff	leach	foot
2nd suit			
Jib	49.5	44.0	16.5
Mainsail ...	60.75	62.5	19.0
3rd suit			
Jib	44.5	39.6	14.8
Mainsail ...	54.6	56.25	17.1

N.B. An additional hanger to be provided on foreside of mast for 2nd jib.

'Water-Fairy'

During its long life only one amendment of importance has been made in the rating rule. This occurred in the late 1920s, when the method of S.A. measurement was changed. Instead of measuring actual sail area as hitherto, the rule was brought into line with the current I.Y.R.U. method. Under this, the fore triangle is measured and 85 per cent. of this is taken for rating purposes; also the roach of the mainsail is unmeasured provided batten limits are observed. When this alteration was made some of the older generation of model yachtsmen told us that the result would be larger boats, and as yachts increased in size they blamed it entirely on to this new method of sail measurement. As a matter of interest let us see how far they were justified and what difference it makes to our present design.

(a) Measuring her by the old method :

Mainsail $\frac{67.5 \times 19.0}{2}$	= 642		
Plus Roach $69.4 \times 3.5 \times 2/3$	= 162	=	804
Jib $\frac{51.5 \times 14.5}{2}$		=	374
			1,178

(b) By the present method :

Mainsail $\frac{67.5 \times 19.0}{2}$		=	642
Fore Triangle $\frac{58.0 \times 18.0}{2}$	= 522		
Less 15 per cent.	= 78	=	444
			1,086

It will therefore be seen that there was some small justification for claiming that the change produced a bigger boat, but this change by no means accounts for the very great difference that exists. The old method actually gave the yacht a great advantage on the area of the jib, which is today almost 20 per cent. over measured. On the other hand the modern system gives 20 per cent. of unmeasured area in the mainsail, but as this is in the leach it is questionable if the advantage gained is anything like as great as would appear on a simple comparison of measured areas. Obviously, this alteration by no means accounts for the enormous difference in size between *XPDNC* and her sisters, and our modern 10s. The real answer lies in the fact that great advances have been made in yacht architecture, both in hull lines and sail plans. The less knowledgeable might think the advantage of the modern boat arose mainly from improved sail design, but this is not so, and even if less obvious the advance in hull design is far more important and has greater effect.

What does this improvement in hull design comprise ? The most important factor is that we now understand the necessity of hull balance, and for this we have to thank the late Admiral Alfred Turner whether we believe *in toto* in his M/C Shelf theory or obtain our balanced hulls by other methods. When a craft has an unbalanced hull much of the energy that should be applied to propulsion is wasted in overcoming the effects of unbalance. Almost equally important is that we have a better understanding of the importance of eliminating resistances to forward motion. This in essence is largely a matter of streamlining both hull and keel appendages. We have also learnt the value of abolishing *unnecessary* wetted surface area. I stress the word *unnecessary* because it is foolish to cut down lateral area to the point when excessive leeway becomes apparent.

In order to determine how much lateral area is necessary, we have to consider the conditions under which a yacht sails to windward. A close-winded yacht will point four points (45 degrees) to the wind, but unfortunately every yacht makes a certain amount of leeway. In a good boat to weather this will not exceed five degrees or thereabouts, so the course made good can be reckoned as approximately 50 degrees to the wind. Now let us consider what this means. Our yacht is pointing 45 degrees off the wind but actually travelling 50 degrees off it. This is equivalent to a water-stream meeting her lee bow and the leading edge of the fin at an angle of five degrees. This naturally tends to push her nose towards the wind, and she carries a small amount of weather helm in consequence even if her hull is perfectly balanced.

Other considerations

There are however other points which must be considered in relation to these facts. Since it is the wind on the sails which causes a yacht to make leeway let us start with the wind. Due to the fact that the yacht is sailing against the wind the apparent " wind at ship " is closer ahead than is the actual wind. Further, the wind, coming from a point so far forward of the beam, causes the sail plan to have an *effective* aspect ratio higher than its *actual* aspect ratio. This is important when we come to sail plan design, as it limits the height of plan which can be used effectively.

The wind can be considered as blowing horizontally. As a yacht heels from the vertical her effective sail area is reduced and the C.E. falls. Likewise as she heels her effective lateral resistance is reduced. The reductions are insignificant at low angles of heel, but become progressively more severe as the angle of heel increases. The angle a yacht heels to a wind of any given strength is determined by when her heeling moment and righting moment are equal. The heeling moment is determined by S.A. and the height of the C.E. The righting moment depends on her weight and the depth of the C.G. The wind pressure on sails can be resolved mathematically into three separate forces. The first—and greatest—pushes the craft to leeward. The second imparts a direct downthrust, and thereby increases a yacht's effective displacement and causes the sailing waterline to lengthen. The third—and smallest—of these forces propels the yacht forward and it is therefore apparent why we have to eliminate resistance to forward movement and prevent any propulsive energy being diverted to overcoming unbalance and other unnecessary purposes, such as water disturbance, etc. One obvious inference is that our yacht must slip through the water with a minimum of fuss and leave as clean a wake as possible.

With vane gear . . .

Returning to the question of leeway and lateral resistance, we have seen that sailing at 45 degrees to the wind and making good a course 50 degrees to the wind, a yacht carries a natural weather helm. When model yachts used Braine steering they sailed to windward with the helm locked amidships and depended on the sails to steer as well as propel them. In consequence, the sail plans were placed rather more forward than they should have been and the jib sheeted a fraction closer than the mainsail to ensure the boat boxing off in a heading puff. With vane gear we can put our sail plan in its correct position over the hull so that both sails can be sheeted to the same angle with the wind, and our steering gear will not only keep the boat sailing full-and-by, but also meet any variation in wind direction. This, of course, enables us to get the utmost drive from our S.A. It is very important however that excessive helm is not required to keep the yacht going, since excessive helm acts as a brake on speed. Tank experiments show that two or three degrees of helm are beneficial or, at least, not harmful, but that greater amounts of helm slow the boat. If our hull is well balanced and has no innate steering vices and the sail plan is placed correctly over it, this is just the amount of helm our yacht should want for her best windward work.

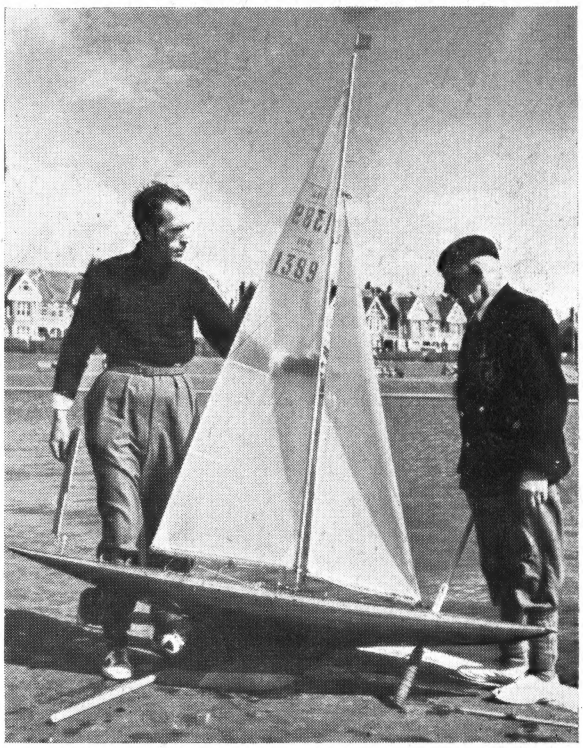
The lateral area required in the fin cannot be ascertained by any mathe-

matical formula, but is a matter of experience. We can however assess matters by comparison with similar boats, but in doing so there are one or two things that must be borne in mind. If we cut down lateral area too much the yacht will make undue leeway and, in consequence, the waterstream will be broader on the bow. This will aggravate the ardency of the boat, and she will require more helm to keep her going which, in turn, will detract from speed through the water. In other words she will make more fuss and go slower. On the other hand speed through the water increases the lateral resistance of a lateral plane of any given area. Hence, a fast boat needs less lateral area than a slow one. Except at very low speeds, such as a yacht makes in a very light air, wetted surface area is the least of the resistances to forward progress. In consequence, the designer is well advised to have slightly more, rather than too little, lateral area in his fin.

I have referred to hull resistances so a few words about these will, I feel, be profitable. It has been proved by tank tests that at very low speeds wetted surface friction constitutes 75 per cent. of the total resistance to forward motion and the remaining 25 per cent. can be grouped as " water resistance." As the vessel's speed through the water increases wetted surface friction drops in proportion to other resistances, and at full speed the percentages are reversed. Water disturbance now causes 75 per cent. and skin friction 25 per cent. On the other hand, since we can regard the power available for propulsion as power less what is lost in overcoming these resistances and realising that propulsive power has increased more than the total resistances as the wind has become stronger, speed has risen in proportion. This is however only true until the yacht reaches the point when the wind is too strong for the amount of sail carried and, at this point, the wise skipper reefs.

Knowledge of sail plans

So much for hull design. Now what have we really discovered about sail plans? The most important discovery is that on the wind a tall sail plan is more efficient than a low plan and *vice versa* off the wind. The reasons why this is so are very simple. As I explained earlier in this article the effect of the sails depends not only on area but also on the height of the C.E. With a high plan the yacht is more quickly brought to her best sailing angle and thereby reaches her maximum sailing waterline. Further, the downthrust on the hull reaches its maximum, which all helps to bring the yacht quickly to her maximum sailing length. Hence, we get more propulsive effect out of any given S.A. On the other hand, in very strong winds, the same S.A. in a low plan is less punishing than it would be in a more lofty plan. In other words a tall sail plan, being more powerful than a lower sail plan of the same area, will have to be reefed rather sooner. Nevertheless, it means that we can have a larger and longer boat with smaller S.A. that is faster than smaller boats with greater S.A. Hence, the modern 10-rater. At the same time it is obvious that this growing process cannot go on indefinitely; there must come a time when we are asking too small S.A. to perform too heavy a task and, at this point, we have in effect a boat always sailing under second suit—no doubt superb in a gale, but useless in normal winds. So far, the evidence points to an L.W.L. of 55-56 in. as being the longest L.W.L. that can be used with advantage to produce an all-round 10-rater.



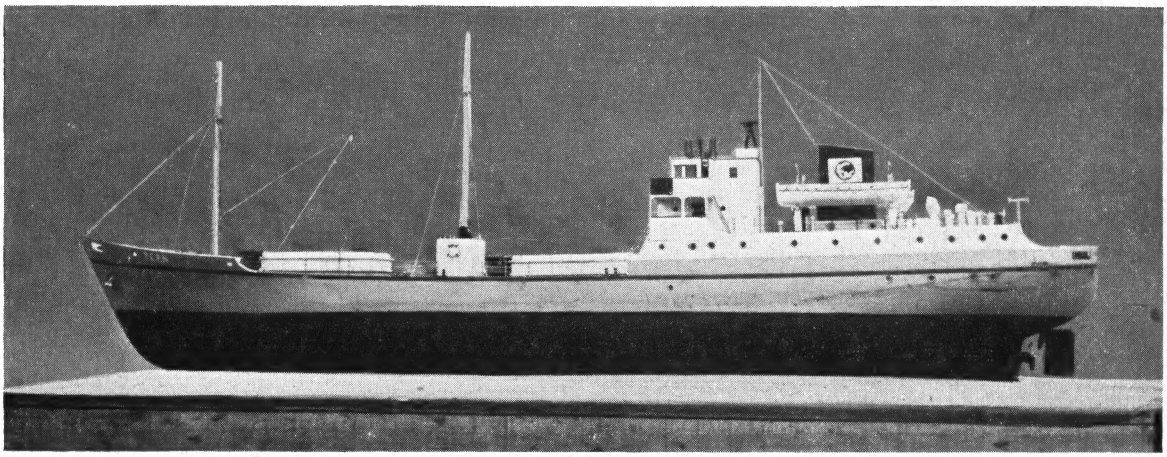
" Brown Sugar " illustrates the modern tendency in 10-rater design

Beware the " theorists "

It will be noticed that in the above as a *practical* designer I have given plain commonsense reasons for the various considerations that must be taken into account in creating a yacht design. Yet some " theorists " would have us believe that aeroplane designers can teach yacht designers their business. But what are the facts? Evolution in both arts has been solely a matter of trial and error. The design of ships has been a matter of evolution over perhaps four or five thousand years, that of aeroplanes as many decades. Naval architects have solved their own problems as have aeroplane designers, and these are entirely different in every way. The model yacht is purely a displacement type, and as such the design of model yachts differs in no respect from that of full-size displacement type craft, and similarly has nothing akin to the design of planing types, which are a thing apart. Unfortunately, theorists are liable to write articles bristling with pseudo-scientific words and phrases and diagrams, and the less informed are thereby greatly impressed. The practical model yachtsman and those who know something of designing would be more impressed if these theoretical gentlemen had ever designed a successful boat. And by " a successful boat " I do not mean one which has managed to keep afloat and sail a little way, but one that has shown itself superior to more orthodox craft in actual organised races.

● To be concluded next month, when the lines plan will be published.

Drawings of the " Water " series, with the body plan drawn full size, are available from the Percival Marshall Plans Service and copies are obtainable from 19-20, *Noel Street, London, W.*1.



General view of the vessel

A working model of m.v. Tern

. . . an illustrated article by the builder CHARLES A. COLEMAN. This fine looking model, made from plans supplied by the owners of the vessel, was built strictly to $\frac{1}{4}$-in. scale

Tern WAS FIRST seen by me as a bare hull—built up as far as the poop deck—being towed down from Beverley to Princes Dock at Hull. Its elegant lines suggested it to be a new design of trawler, but it proved to be a new refrigerated cargo vessel built by the famous firm of trawler builders, Cook, Welton and Gemmel Ltd. of Beverley, for the General Steam Navigation Company of London. Her dimensions are: length o.a. 214 ft., breadth 34 ft., depth to main deck 19 ft. 3 in., load draught 13 ft., gross tonnage 1,028.

Main deck level

Work on the model—the builders and owners gave me every assistance—was commenced at the end of September, 1954, some 18 months after I had decided I would like to build it. The bows from station 8 forward and from station 4 aft (see general arrangement drawing) were built up and hollowed out bread and butter fashion as far as the main deck level. The inner edges of these blocks were rebated $\frac{1}{8}$ in. deep × $\frac{1}{2}$ in. wide. They were connected by a piece of wood 1 in. wide × $\frac{1}{2}$ in. thick let into the two ends flush with the rebates, which formed the backbone or keel of the vessel (see sketch). A number of bulkheads of $\frac{3}{8}$ in. thick waterproof plywood were fitted to this.

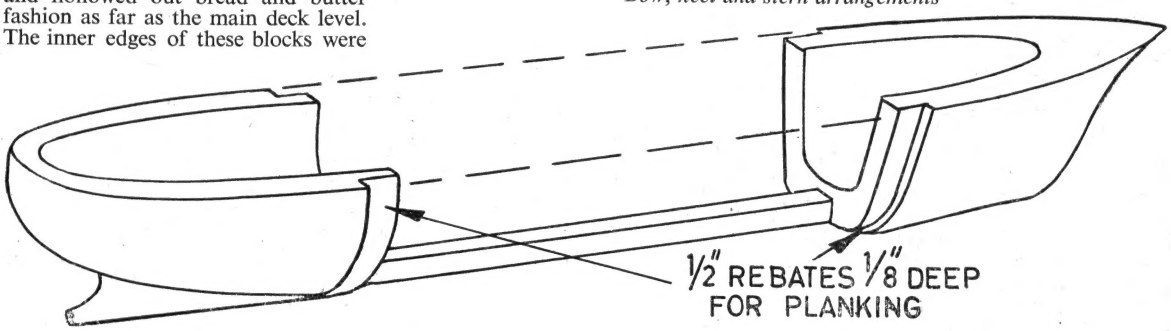
The centre section was planked with obeche strip $\frac{1}{8}$ in. thick × $\frac{3}{4}$ in. wide. Then planks were fixed at the ends with brass screws and at the bulkheads with panel pins. The poop deck and bulwarks at the bows were made of $\frac{1}{8}$ in. waterproof plywood, being rebated into the basic hull. The bridge, poop deck and the superstructure generally can be built up in various ways, depending upon the ideas of the builder and also on the type of power unit to be used. In my case the poop superstructure was built to lift off as a complete unit for easy access to the radio gear, all of which is stowed under the poop deck. The engine installation is under the after hatch cover and there is ample room for starting the engine. The forward hatch cover gives access to the fuel tank.

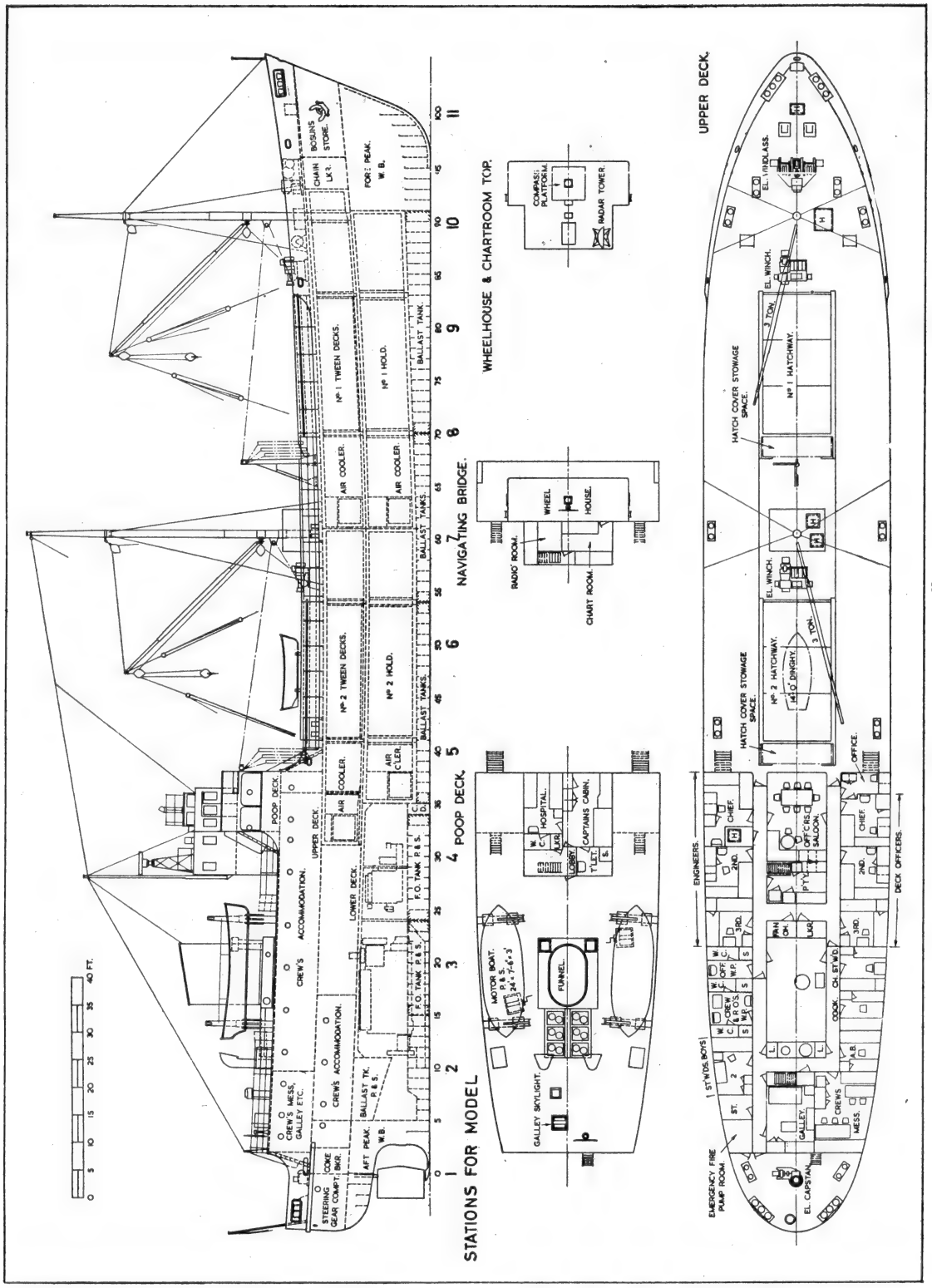
Commercial fittings available

All the deck fittings were manufactured on an old 3 in. lathe, but commercial fittings are available for those without facilities for manufacture. The model is driven by an E.D. Mk. II engine, water cooled and silenced for marine work. A Ripmax flexible drive is fitted and the propeller also is Ripmax and made of nylon. The speed is about four or five knots.

Radio control is provided by single channel equipment using a hard valve receiver and E.D. clockwork actuator.

Bow, keel and stern arrangements




STATIONS FOR MODEL
0 5 10 15 20 25 30 35 40 FT.
1 2 3 4 5 6 7 8 9 10 11
POOP DECK.
UPPER DECK.
LOWER DECK.
CREW'S ACCOMMODATION.
CREW'S MESS, GALLEY ETC.
COKE BKR.
STEERING GEAR COMPT.
AFT PEAK. W.B.
CREW'S ACCOMMODATION.
BALLAST TK. P & S.
F.O. TANK P & S.
F.O. TANK P & S.
AIR COOLER.
Nº 2 TWEEN DECKS.
Nº 2 HOLD.
BALLAST TANKS.
Nº 1 TWEEN DECKS.
Nº 1 HOLD.
BALLAST TANK.
CHAIN LKR.
BOSUN'S STORE.
FOR. PEAK. W.B.
NAVIGATING BRIDGE.
WHEELHOUSE & CHARTROOM TOP.
COMPASS PLATFORM.
RADAR TOWER.
WHEEL HOUSE.
RADIO ROOM.
CHART ROOM.
POOP DECK.
MOTOR BOAT. P & S. 24'-7-6"-3'
FUNNEL.
GALLEY SKYLIGHT.
HOSPITAL.
CAPTAINS CABIN.
LOBBY
T'LET.
UPPER DECK.
EL. WINCH.
Nº 1 HATCHWAY.
3 TON.
HATCH COVER STOWAGE SPACE.
Nº 2 HATCHWAY.
14'0" DINGHY.
OFFICE.
ENGINEERS.
DECK OFFICERS.
OFFICERS SALOON.
CHIEF.
2ND.
3RD.
PANTRY
CH. STWD.
COOK
GALLEY
CREWS MESS.
EMERGENCY FIRE PUMP ROOM.
EL. CAPSTAN.
1 ST'WDS. BOYS
ST.
W.C.
OFF.
W.P.
CREW'S MESS
S.
A.B.

Building an early Sixth Rate

In this, his second instalment, R. J. COLLINS explains how to build the hull of the model in " Navy Board " fashion, showing the frames and interior construction

AS PROMISED last month I now give details of how to build a more ambitious type of model. Doubtless many—if not all—of my readers have seen examples of the old " Navy Board " models showing the timbers of their construction. These models, nearly always of exquisite workmanship, show varying degrees of openwork.

Roughly speaking, from the start (about 1660) to 1670 most of the outer planking and a lot of the deck planking was left off. The original model of the *Loyal London* 1665 was a good example of this. This model was unfortunately destroyed by enemy action during the war but a reconstruction was undertaken by Messrs. Spence and Wilcox, and is now in Trinity House, London. From 1670 to 1720 the hulls were planked from the lower wales up, and about half the deck was covered. The *Prince* 1670 in the Science Museum, South Kensington, is an example of this. After this date the hulls were usually fully planked or covered and only small parts of the deck were left off. The 50-gun ship treated in my last series will serve as an example of this. These dates are *very* approximate, occasionally models of one style appearing well into the later period.

The type we will consider is of the second class, open below the wales and planked above. Let me say that the building of such a model is not so much more difficult than the more orthodox, but *does* call for infinitely greater concentration—and a lot more time. Several hundred separate pieces of wood—timbers—have to be cut; all the floor timbers are different and each pair of the second and third, so there is no quick way. I have no desire to discourage you. But I would like you to know what you are undertaking !

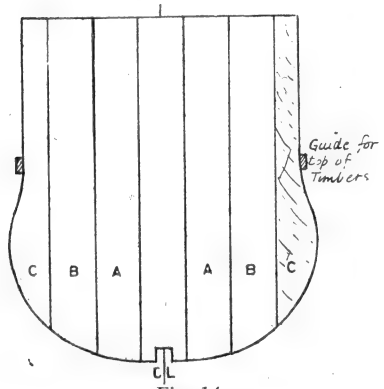


Fig. 14a

The draught shows, among other things, a complete set of each eighth frame, the second timber of which is to be considered as being farthest from the midship flat. It will be seen that the floor timber is fastened at right angles across the keel. I call this the first timber. The second starts about half-way along the arm of the first and extends to the upper edge of the top lower wale. The third starts at the bottom edge of the bottom lower wale and reaches to the top of the sides. A fourth can be fitted between these, continuing the second timber to the top. In this model I have combined the second and fourth into one long timber. In cutting this one for grain ignore the extension—it will be supported by number three. In the real ship there would be at least five timbers, hence my renaming to avoid confusion.

Fit over inner block

Like all modelling there are several ways in which to do the job and in describing one of them I do not wish to imply that it is the best, but just that I found it would work. Some of my readers may remember seeing me struggling with this model at the 1955 MODEL ENGINEER Exhibition and I can state now that it did *not* come right ! To hold the timbers in place as the building progresses calls for some very firm supports. The first kind that occurred to me was ribbands—thin slats of wood forming an outer mould into which the timbers were placed. These would themselves be governed by certain " key " timbers. That is how the ships were built. For modelling these would be more firm if they were held on the *outside*, the whole forming a kind of basket. In discussing the matter with Mr. Beasley, my fellow demonstrator, he suggested fitting the timbers over an inner block, and this is what I have done.

This core must be made as carefully as any solid hull and must be so constructed that it can be removed in spite of the tumblehome. I therefore constructed it of $\frac{1}{2}$ in. (actual) planks on the bread and butter system, built to the buttock lines (that is up and down lengthwise) instead of the more usual water lines (see Fig. 14a). The seven layers were held together by long screws driven in where they would be clear of the hull timbers. To remove it the centre section was withdrawn after extracting the screws and the other sections taken out one by one. Into the middle plank of the core must be cut a groove to take the inner part of the stem, the keelson and the stern post. Note how the stern portion is cut away to allow for the dead-wood. At frequent intervals clearly mark lines at right angles to the keel. The keelson is 1 ft. wide × 1 ft. 1 in. deep. Space prevents me from giving a full size drawing of each frame but from the ones given draw out the others and cut them from 9 in. wood, suiting them to the grain. I say 9 in. but make them a " few thou." less to allow for the glue. I used box wood almost throughout for this model, but any tight-grained wood would have done, and I used a fret saw to do the cutting. I cut as true as possible to the outside line and, depending on the distance from the midship flat, allowed a little on the inside. The floor timbers are square at the keel and taper (in and out) to 7 in. I think I should ignore this taper until later, taking it off in the final outside clean-up. Around the midship line the timbers will lie flat on the core, but as they recede away the

inside must be bevelled. Thus, start at the midship and work both fore and aft. For the time being fasten each floor timber to the keelson with a spot of glue.

It will probably be best to complete each frame as you go or, at least, to add the second timber to the first, the thing to watch being the keeping of the timbers at right angles to the keelson and the preventing of their taking up more room than allowed. When all are on, peg a number (I did every alternate one) of the floor timbers to the keelson. Fasten on the dead-wood at the stern and then with file and glass paper smooth off the outside.

The keel and stem can be put on—the stern post too if it has not already been built in with the transome pieces. Glue these on as at this stage it will be impossible to fasten the stem on in any other way. A couple of pegs can be put right through the keel and timber into the keelson.

Depth gauge for drill

From this stage you proceed more or less as for the other model. But on the wales and planks. For this some kind of depth gauge will be needed on your drill as you must be careful not to let the treenails go into the core. For a gauge I used a small piece of wood fitted over the drill, just allowing the correct length to protrude—crude but quite effective. I think it is much better to keep the model on the core until all that is possible to be done on the outside has been completed; when you are satisfied that nothing more can be done, remove the core and clean up the inside. There should not be a great deal of this as you should have taken off most of the timber bevels before fixing. Drive a number of long pegs through the keelson into the keel and stem. With this model a clamp must be put around the inside to support the main deck beams. The camber of these at midships should be 4½ in.; they are 10 in. wide and 8 in. thick. The carlines are 7 in. wide and 6 in. thick while the ledges are 4 in. wide and 3 in. thick. Knees, if you put in any, are 6 in. thick. Keltridge shows hanging knees in his draught and they are about 3 ft. along the beam and 4 ft. down. These hanging knees go by the side of the beam, not beneath it. I have shown the beams, etc., on the plan sheet. How much you put in depends upon how much deck you intend to leave off. I have shown by dotted lines what I think would be the normal practice for this type of model.

Steps have to be fitted to take the heels of the masts and also the legs of the bitts. Battine gives the measurements for the mast steps as fore 1 ft. 10 in., main 1 ft. 11 in., and mizzen 1 ft. 6 in. This is breadth—he doesn't give any other dimensions. It would be rather interesting to know whether the old shipwrights were so meticulous as to make the difference of 1 in. in the two steps. I have taken it for granted that the bottom of the mast was squared and fitted into a square hole to half the depth of the step.

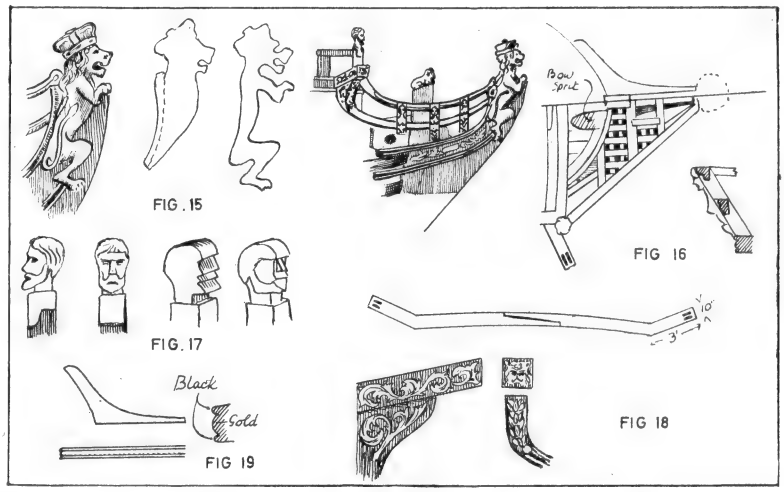
Work on figurehead

Excepting for the final stand, which I will discuss later, the two paths now completely merge. We start the "combined ops" with the fittings for the outside of the hull. Taking an orderly sequence from the bow we commence with the figurehead (Fig. 15). This is a small lion. The drawing shows this in three sections, the middle piece to be the thickness of the beak-head and which will form (roughly) the body and the head. The two side pieces, each half the thickness of the middle, will form the legs and some of the bulges. These will both be cut to the same pattern. The head board will be treated as part of the centre piece as it is rather small to make separately. Cut out the pieces and glue together. As they have to be carved it is best to leave them clamped together at least overnight to ensure a firm joint. The actual shaping I did with a small chisel and a file, chiefly the file. The tail is a piece of thread glued on both sides.

Of the carvings of this model I would like to make a few general observations. Don't be afraid of them; make your cuts deep and distinct and, above all, clean. If you are new to the job don't try to show too much, but keep to the main idea. Above all *don't* just use modelling clay and wriggle it about with a pin! I can assure you that the result of such endeavour not only looks awful but looks like . . . modelling clay wriggled about with a pin.

The figurehead is part of the bow assembly, the most difficult part of a model (Fig. 16). The top rail starts as a timber head—literally—as it is carved as a head (Fig. 17) and, then, in a shallow sweep reaches to the head board behind the lion. Cut a cardboard pattern first and be quite sure it fits. From this I cut the rail from Perspex. This can be bent to a final fit if made warm. Drill a small hole at each end for fixing. In illustrating this I give details of how I "carve" the head. Note that the rail is actually a heavy piece of moulding. The pattern of this moulding is cut from the back of a hacksaw blade and repeatedly drawn along the material to be moulded. This method applies to all the mouldings. The second rail is integrated with the cat-head. I should make and fit the actual beam first. This, as the drawing shows (Fig. 18), is a couple of timbers scarfed in the middle and stretching right across the head. I see no reason why—for the model—they cannot be in one piece. Records give them as 10 in. wide and 11 in. thick. They jut out 3 ft. at a slight angle forward Two sheaves are let in to the outer end and a bracket extending about two thirds of the length sweeps down and becomes the second head rail. The carvings at the side of the cat-head can be cut from thin card and gilded before being glued on. The heavily carved bracket is best made by cutting a silhouette from a thick piece of wood and then dividing down the middle. As usual, roundness can best be imparted with a file.

Below the second rail are the two knees of the bow (Fig. 19). The



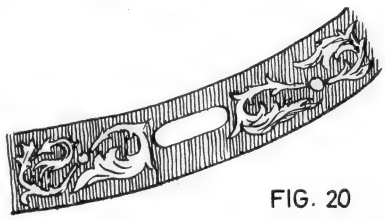


FIG. 20

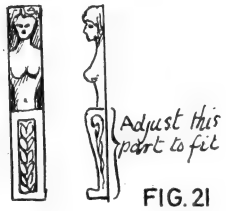


FIG. 21

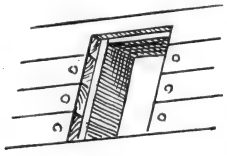


FIG 22

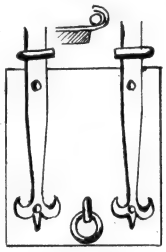


FIG 23

FIG 24

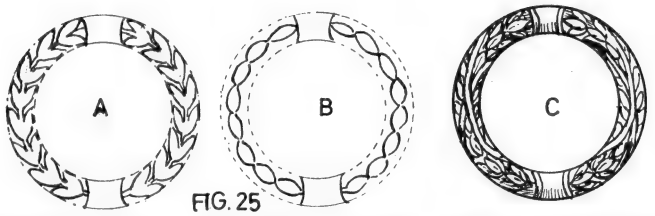


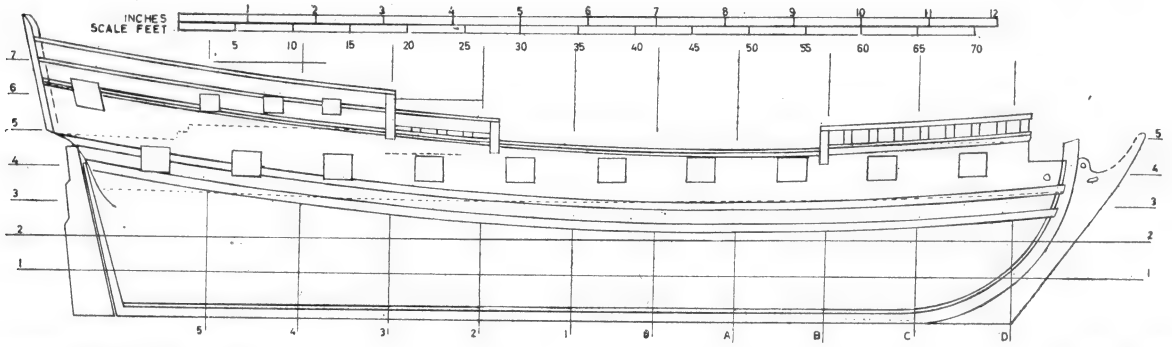
FIG. 25

upper one provides a base for the head timbers and terminates actually as the head board. The lower bracket follows the sweep of the upper, but ends at the feet of the figurehead. Between them is an ornamental scroll cut from thin card and gilded before gluing. There is also the elongated hole for the gammoning (Fig. 20).

Back to the head again. There are three upright timbers on either side (Fig. 16), two full length ones and one shorter, which starts from the hull just above the hawse hole. These are best fitted from the inside. The outer surface is ornamented with full length carvings (Fig. 21). These are of different lengths, are paired port and starboard, and, of course, are carved and glued on afterwards. Across the top of the beak rails are three cross beams, the innermost divided by the stem. Gratings are laid between them with an opening for the gammoning. The stem head is surmounted by a recumbent lion (Keltridge shows a dog, but please yourself). The single hawse hole is strengthened by a layer of planks. The entrance to the hole is nicely rounded out.

The inside of the ports (Fig. 22) must be lined with thin wood about 2 in. thick. Cut some long strips of the correct thickness and the width of the port. Paint it the same colour red as the inside of the hull, particularly the edge. The painting of the edge at this stage is important as it is very difficult to carry out this operation after it is fitted. Cut a number, two per port, the exact length of the port. Touch with a spot of glue and press into position, one on the sill and one at the top of each opening. Put the lining back the width of the outside timbers. Next cut the side pieces and treat these the same. Any bits extruding from the back can be trimmed off and repainted.

The lids (Fig. 23) must be made from the same sort of wood as the hull planking and are fitted to preserve the run of the grain. As an added refinement score a continuation of the hull planks. The hinges can be made from brass shim, each piece to be slightly longer than the width of the lid. It is very difficult to make working hinges correct at this scale so make them as narrow as you can. I give a sketch of one of these hinges from Keltridge. (I don't know if there was a standard design of the period. I, personally, very much doubt it. Keltridge's design turns up repeatedly until the need for such things ended.) Drill holes through the hinges and lids, making them slightly smaller than the pins you will use for bolts. Great care must be used for fixing these as I always find a tendency for the lid to split—generally when pressing home the last pin ! Shortened pins, bent at right angles, are pressed into the hull above the ports. Place the lid into the port with the overhang of the hinge passing behind the bent pins. It would be better, of course, to put these parts of the hinge in after the lid is in position. Wrap the hinge around the horizontal part and trim off. A small ring bolt is placed in each lid. The bolt is made from a



bent pin and the ring from wire. Pins can be bent without breaking if they are annealed, but don't soften them too much.

Deane's draughts show the inside of the lid decorated with a lion's head, full face (Fig. 24). As we are emphasising the decorativeness of this model I should certainly add this. It is in gold, shaded with different browns and must be made to look as fearsome as possible. I am afraid mine looks rather benevolent ! It is painted on upside down from the inside of the ship so that it looks correct when the ports are opened to their limit.

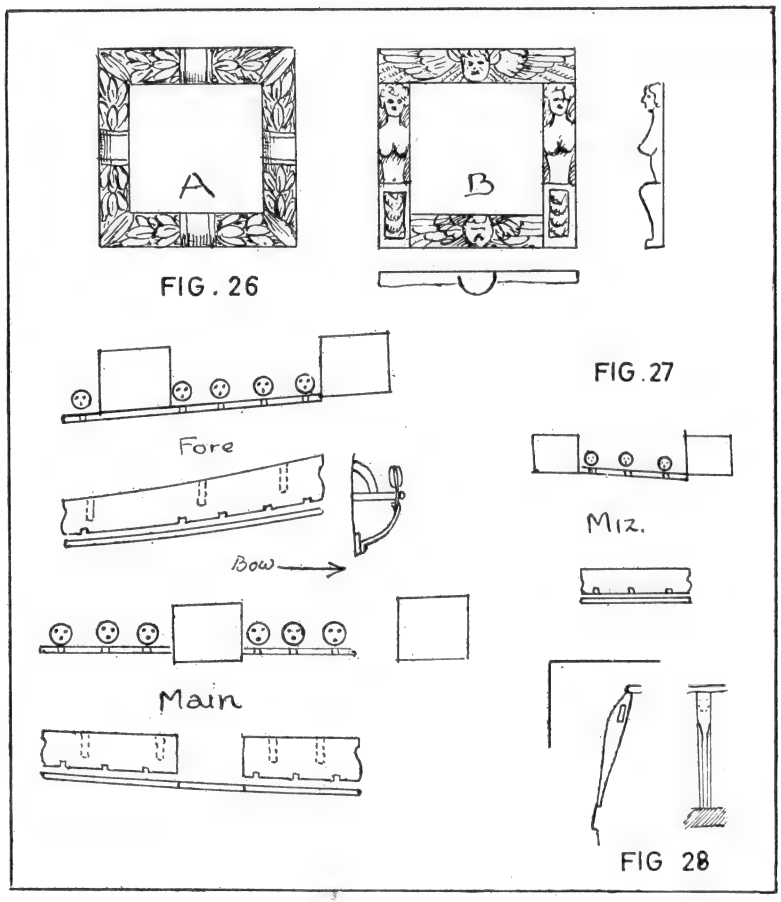
Round or square

Port wreaths can be either round or square. Keltridge shows round and Deane square. I have given a sketch of both. Should you use the square don't forget to raise the top piece far enough to allow for the hinge of the port lid. I made my round wreaths (Fig. 25) from card about two scale inches thick. The first piece is just the plain ring. To make it easier to cut out the middle you can cut through the ring itself. The second layer (*A*) consists of the double leaves and the top and bottom strap. One of these straps must be glued over the cut (if you have made one through the ring). The third layer (*B*) is the central leaves and the wide straps. When perfectly dry the two wide straps can be rounded off top and bottom with a small file. The thin cross straps (*C*) can be made from paper or gummed strip, the whole to be gilded before attaching. Some of the wreaths will have to be cut to fit.

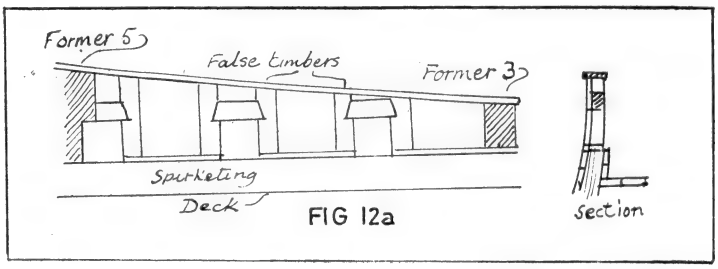
Of the square wreaths (Fig. 26) type B is best cut from wood. Cut the design across the grain, part off and round. The drawing shows two designs but any similar design will do. Type A is made in the same manner as the round ones. One important thing: the smaller ports of the quarter deck must match the larger ones.

Attach to ship's side

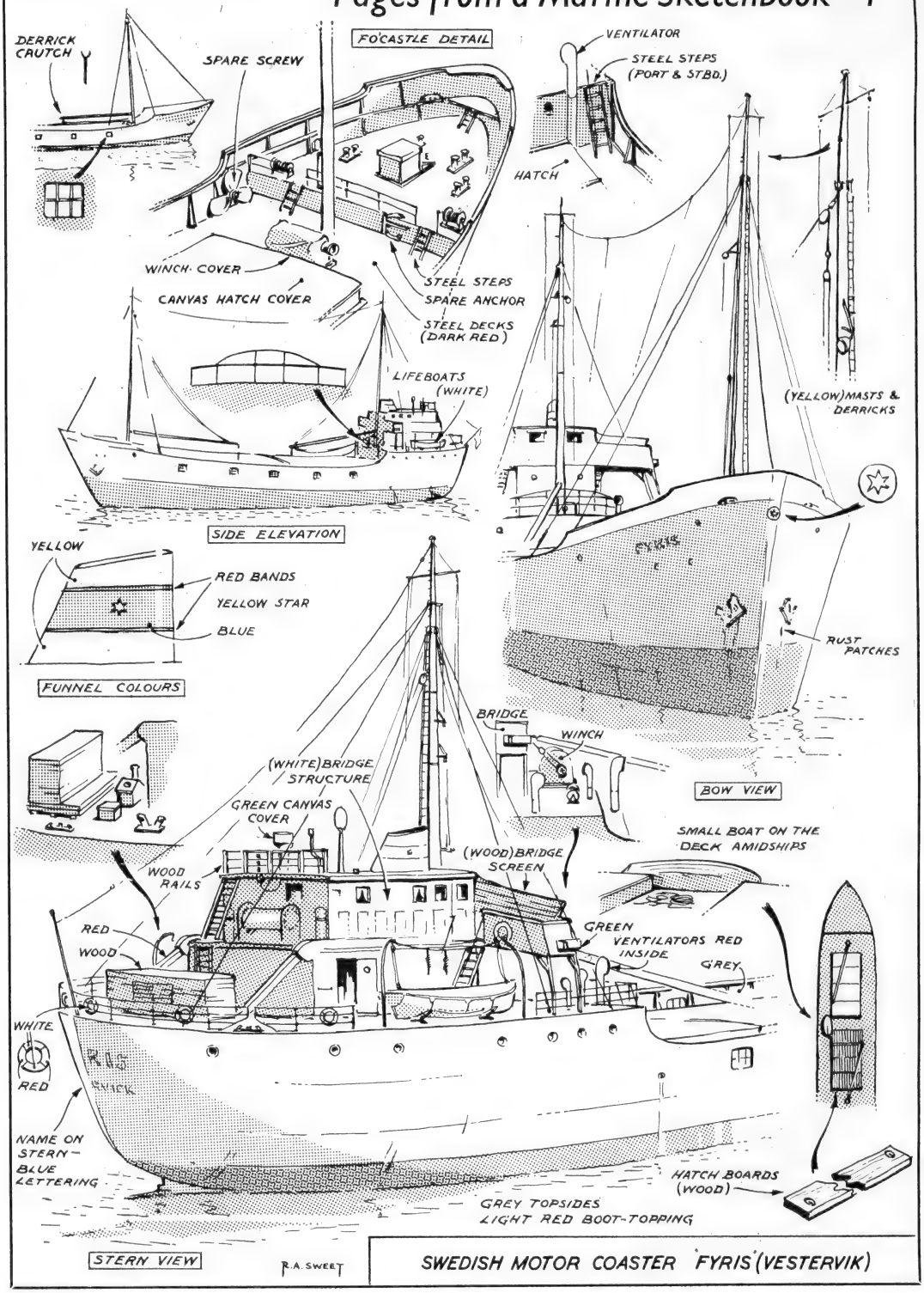
The channels are normally on the upper or channel wale, but as there is no upper wale they must be attached directly to the ship's side. Fig. 27 shows their position in relation to the ports. The main has to be divided. Dimensions: fore, length 9 ft. 6 in., breadth 1 ft. 8 in. forward and 1 ft. 5 in. aft, thickness of inner edge 4 in. and of outer edge 2½ in. Main, length overall 11 ft. 6 in., breadth 1 ft. 6 in. forward and 1 ft. 3 in. aft, thickness of inner edge 4 in. and of outer edge 3 in. Mizzen, length 4 ft., breadth 10 in., thickness 2½ in. Cut notch in the outer edge of each channel to take the metal strops of the dead eyes. Later, this edge is covered with a thin strip of wood. Battine lists spurs which, if I understand him aright, are placed on the top of the channels to strengthen them against the upward pull of the shrouds.



Correction: In my rush to get the copy of the first instalment to the printer, I failed to recheck. You will remember that I remarked (page 80) on the very steep camber of the deck of the fo'c'sle. Further thought leads me to reduce this to the same as the main deck despite Battine's statement that it was 1 ft. I also make the camber of the quarter deck 8 in. and the roof of the cabin 1 ft. The clamp to hold the quarter deck beams to be 1 ft. 8 in. instead of 1 ft. 4 in. and the clamp under the cabin to be 6 in. And as there is no place to belay the rigging of the main and mizzen masts I have had to modify a part of the internal planking. From the spirketing on the quarter deck upward the hull is left open on the inside. The packing pieces finish off at this level and there is a thin capping piece along it to finish off. Former No. 3 remains, No. 4 is cut off level with the spirketing and No. 5 remains. A false timber is glued in each side of the gunports and a cross piece across the top of the ports. This means that belaying pins can be put right through the top capping rail. I have drawn Fig. 12a to show this.—R.J.C.



Pages from a Marine Sketchbook—1



General view of the ship

'Whitewing'—

One of General Steam Navigation's latest U.K.-Continental traders which has inspired LAURENCE DUNN to contribute one of his detailed sectional drawings

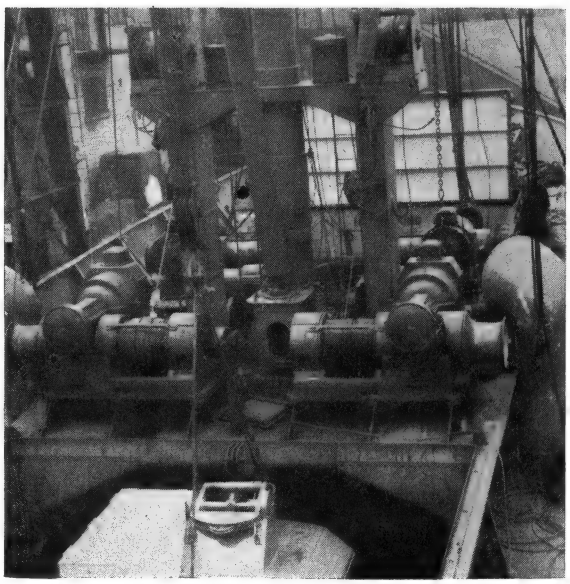
IN RECENT YEARS the General Steam Navigation Co. Ltd. have evolved a new and smart looking profile for their larger ships designed for service to northern Continental ports. Although most of the vessels in this group vary slightly in detail they are built as shelter deckers with two holds forward and one or two aft of a short compact superstructure.

Whitewing and her sister *Ringdove* were built in 1953 and '54 by the Ailsa Shipbuilding Co. Ltd. at Troon, and it was the former which, a little later, represented the G.S.N. at the naval review at Spithead.

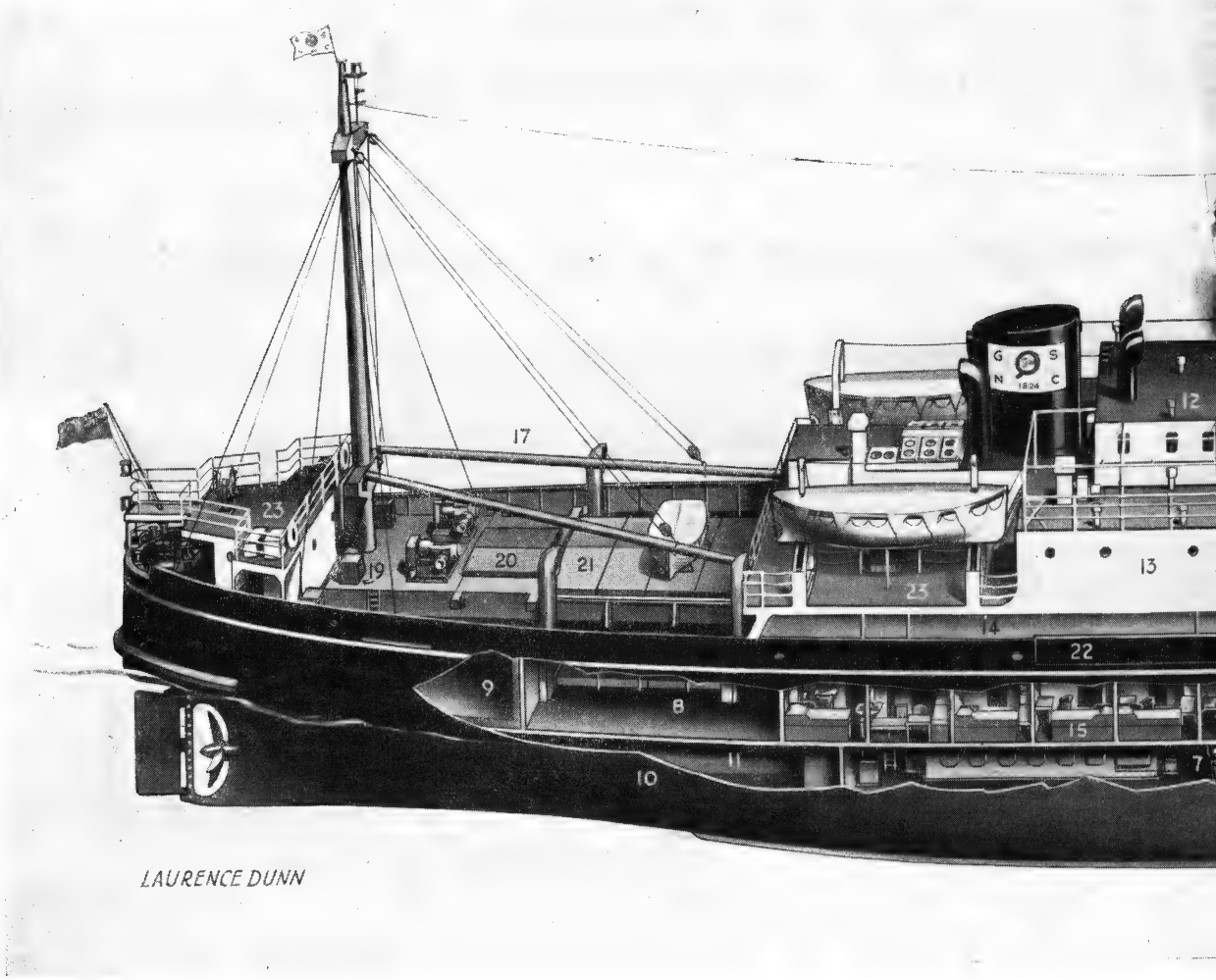
Whitewing is not confined to one service alone; having a rather heavier load derrick than most she is apt to be switched whenever there is an extra large item of cargo to be carried. When visited recently at her regular London berth—in the Regent's Canal dock—she was loading for Bremen.

She measure 248 ft. 7¾ in. in length overall (236 ft. b.p.) × 38 ft. 4 in. breadth mld., the depth mld. to main deck being 14 ft. 2 in. Her frames are spaced at 24 in. intervals throughout. Flush decked, she has continuous bulwarks which, near the bow, have

Looking forward from the bridge



'Whitewing' . . .

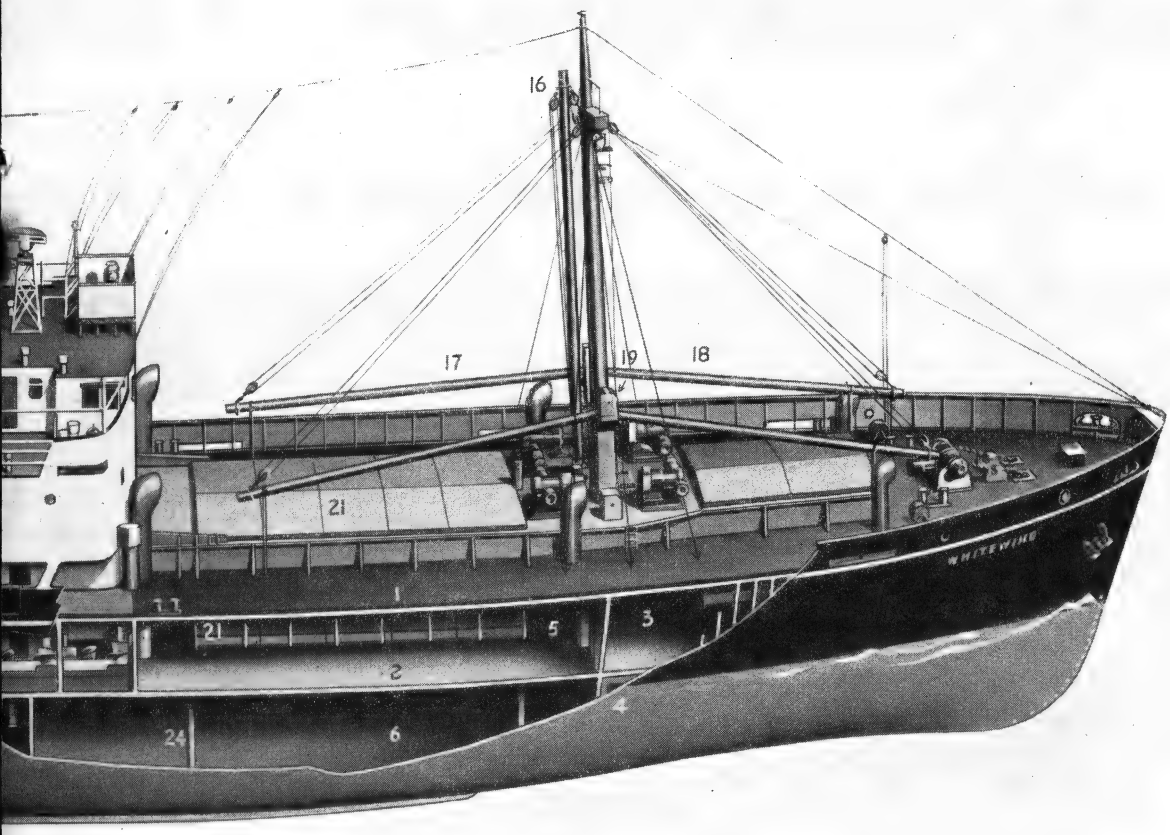


Sectional drawi

KEY

1. Shelter deck
2. Main deck
3. No. 1 'tween deck
4. No. 1 hold
5. No. 2 'tween deck
6. No. 2 hold
7. Engine room
8. No. 3 'tween deck
9. Insulated cargo space
10. No. 3 hold
11. Shaft tunnel
12. Captain's accommodation
13. Engineers' accommodation
14. Crew's accommodation
15. Crew's accommodation (starboard only)
16. 15-ton derrick
17. 5-ton derrick
18. 3-ton derrick
19. Wire reel
20. Transverse sliding hatch cover
21. McGregor steel hatch covers
22. Gangway recess
23. Planked deck (all four decks amidships and top of after deckhouses)
24. Pillar

less flare than the hull below. Aft, near the waterline, there is a very pronounced knuckle. Her gross tonnage is 1,102 and laden she has a displacement of 2,315 tons (1,127 tons d.w.) on 14 ft. mean draught. In light condition she displaces 1,188 tons on a mean draught of 8 ft. 1 in. She is powered by a 6-cylinder S.A. 2-stroke Denny Sulzer engine which is of trunk-piston direct reversible type, and this gives a service speed of 13 knots. Three 100-kW generators provide auxiliary power. She has one 15-ton derrick on the foremast, the rest being of 5- or 3-ton capacity. All are served by electric winches. Most of the hatches are of the familiar McGregor type but the aftermost one, over the insulated cargo space—just forward of the mainmast—has covers which slide in transverse direction. To the model-maker the details of the foremast will arouse interest, for the bases of the derricks hinge on a lofty crosspiece by what are virtually flat



g of " Whitewing "

sided kingposts joined by a horizontal which has a V-shaped base each end.

Steel weather deck

Immediately on top of these uprights are two wire reels, while closer to the mast are the now sealed-up bases of cowl type ventilators. Aft of the mainmast there is a small tonnage hatch measuring 4 ft. 6 in. × 10 ft. which is at a lower level than the others, only about 2 ft. above deck. Except for the midship section all the weather deck is of bare steel, but amidships all decks are planked with Oregon pine, as is the top of the deckhouse aft. This section contains a small office and accommodation for two Customs officers. Excluding these *Whitewing* has a complement of 27: captain, three deck officers, four engineers, W/T operator, three stewards, cook, bosun, carpenter, five seamen, donkeyman, two greasers, two cadets, and two boys. Abaft the wheelhouse are the radio room (port), and chartroom (starboard), and then the captain's accommodation. The officers' lounge is on the deck below on the centre-line just forward of the funnel. Around it are arranged the officers' and engineers' cabins, to port and starboard respectively.

On the deck below the galley is at the aft end of the superstructure, again on the centreline, while forward of the engine casing is the pantry and the officers' mess, which looks out forward. Cabins for the rest of the crew are arranged to port and starboard. On the shelter deck are the remaining cabins—all on the starboard side. Most of the corresponding space on the port side is occupied by the refrigerating machinery. As the drawing shows, *Whitewing* has two insulated cargo spaces totalling 9,030 cu. ft.—equal to about one tenth of her total cargo capacity.

Control of rudder and sails

In this article H. C. ALDRIDGE describes the types of gear required and their installation

A NEW AND exciting idea of model yachting opens up when we consider the possibility of controlling a yacht and carrying out manoeuvres exactly as if the helmsman is on board. The popularity of full scale yachting is doubtless attributable to the skill required in mastering the craft in the ever changing conditions of wind and weather and, finally, putting one's knowledge to the test in competitive racing. The radio control of model yachts demands the same skill and, in line with recent developments in receiver design, it only requires a larger number of enthusiasts to develop it into one of the most keenly contested classes.

On the larger class model yachts we can only consider using the vibrating reeds receiver, as this is the only suitable type which I know to be commercially available at present. A minimum of four controls is required, and these cannot be obtained from the commercial single valve receivers without complicated additions to the circuit. Unfortunately, these receivers are considerably more expensive, but I hope that this will not deter those who are considering taking up this sport. It is worth the initial cost of a reliable receiver as it will afford years of pleasure at running costs which are next to nothing. The earlier types of receiver were fitted with three reeds, and these I do not consider really satisfactory for controlling yachts. Four controls are necessary and these can be obtained by buying a receiver with a four or six reed unit.

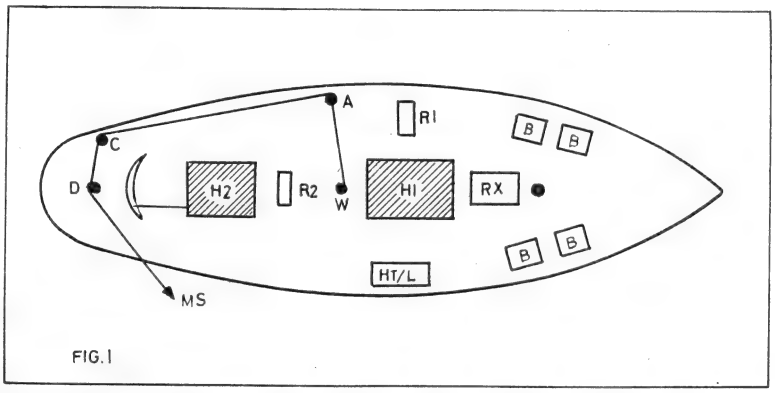


FIG. 1

H1—Main Hatch, H2—Rear Hatch, RX—Receiver, B,B,B,B—Motor and Relay Batteries. R1 and R2—G.P.O. Relays, HT/L—HT and LT Battery. W—Winch Spindle, MS—Mainsheet attached to end of boom, A.C.D.—Pulleys attached to deck. With the exception of B,B,B,B, all components are fixed to underside of deck by means of brackets made from Juneero strip

Last month I described the rudder mechanism and this should be installed in the larger class yachts in exactly the same manner. It will be necessary to mount two motors, however, one each for the rudder and winch for mainsail, and the rudder motor therefore should be mounted nearer the stern. As it will probably be difficult to fix this in position through the existing main hatch, it will be necessary to make another hatch on the stern end of the deck. Fig. 1 gives the layout of the gear on my yacht.

The components are so placed that it is possible to carry the yacht by the handle which is screwed to the keel under the main hatch. This is well worth considering as it is impossible to launch a yacht by oneself without this handle, and it is not always convenient or desirable that two people should be necessary every time it has to be carried from one place to another.

The winch motor is fixed to the underside of the deck in the same manner as the rudder motor and the two G.P.O. relays and the receiver and the HT/LT battery are similarly

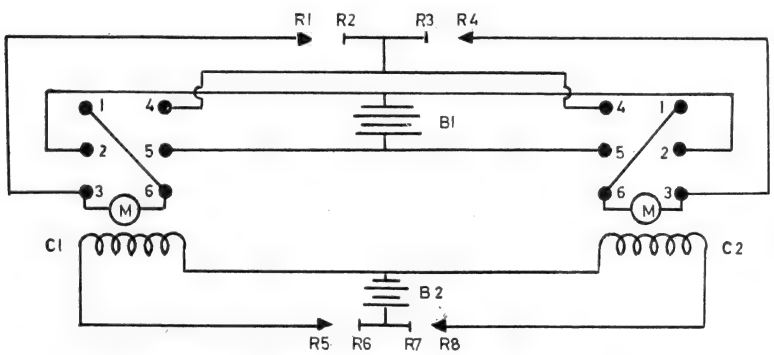


FIG 2. CIRCUIT FOR PERMANENT MAGNET MOTORS

R1-R8 Relay contacts on 4 reed receiver. Nos. 1-6—Contacts on G.P.O. double pole change-over relay, C1, C2—Approx. 150Ω coil on G.P.O. relays, B1—6 or 12 volt motor battery, B2—4½ volt G.P.O. relay battery, M—Permanent magnet motors. In the relay rest position 1 joins 2, 4 joins 5. When R5—R6 is closed 2 joins 3, or R7-R8 is closed 5 joins 6

fixed by means of brackets. The driving batteries in my yacht are allowed to rest on the bottom, and protection against moisture is afforded by placing them inside waterproof bags. The receiver should be enclosed in a box to avoid any possibility of water—particularly salt water—getting inside, and it should be possible to remove it from the yacht as required without having to disconnect any wires in the intergear. This is carried out by means of a six way plug and socket, the connections being made at points R1 to R8—Figs. 2 or 3. It will be noted that R2, R3 are connected to the same pins and similarly R6, R7. These joints are made by connecting the respective relay contacts on the receiver.

Of all the different models that have been worked by remote control, there is probably nothing which has received less attention than sail control of model yachts. There are relatively few yachts compared with the large numbers of power boats which are radio controlled, and of the yachts which I have seen not one has adopted the same method of hauling in and letting out the sails. My own yacht is, as far as I know, the only one fitted with a straight forward winch, and for this reason I am going to describe this in preference to the other methods which adopt some form of cam operated lever arm. All I can say in its favour is that it has operated satisfactorily under extremely difficult conditions both on inland lakes and on rough water in Poole Harbour.

The first essential is a powerful electric motor, and I cannot do better than recommend the 12-volt shunt wound motors which are offered by the Midland Instrument Company of Birmingham as Government surplus stock. I purchased three of these motors at five shillings each 12 months ago, and I hope supplies will last to enable modellers to obtain their requirements. The current consumption is incredibly low; quarter amp at no load and just over half amp at full load. They are fitted with a 15-teeth gear wheel and, if meshed with a 100-teeth wheel, they give an ideal speed for the winch. My winch is actually the $\frac{3}{16}$-in. dia. spindle from the reduction gear which protrudes through the deck for two inches and the sheets are connected to it by a $\frac{1}{16}$-in. dia. hole drilled through the centre 1 in. above the deck line. The sheets are then led through three pulleys to a point immediately under the end of the boom when it is in the close hauled position and finally joined to the end of the boom itself by means of a small screw eye (see details in Fig. 1).

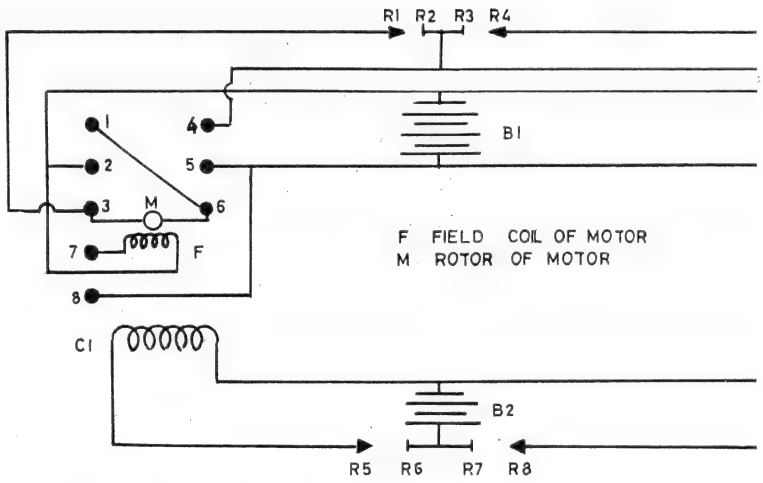


FIG 3 CIRCUIT FOR FIELD ENERGISED MOTORS

Details are the same as for Fig. 2 except that the G.P.O. relay is a double pole change-over type with one extra make, Nos. 7 and 8 on circuit. In the relay rest position 7 joins 3. When R5-R6 is closed 7 joins 8

It is necessary for both the rudder and winch motors to be reversed, and this is carried out with the aid of ex G.P.O. reversing relays. These are available for between four and five shillings each at Government surplus stores, and wiring diagrams for permanent magnet or field energised motors are given in Figs. 2 and 3. It is only possible for one control to be operated at a time so that one battery can be made to operate the two motors and, similarly, one battery (a different one from the motors) to operate the relays. Weight is of little importance, and I use two six-volt B.6120 lantern batteries wired in series for the motors and a $4\frac{1}{2}$-volt B.6110 for the relays. These are sufficient to last a whole season or for 30 hours' sailing time.

ROUND THE WORLD IN SAIL

The story of the last cargo-hunting full rigger . . . . . by JOHN ANDERSON

THE VERY LAST sailing ship to go right round the world on a cargo-hunting cruise was the fine old Norwegian full-rigged ship *Derwent*, of Arendal. She was a handsome ship of 1,931 tons and she was launched away back in 1884. In her heyday, she plied in the Australian and New Zealand wool trade and she proved to be more of a good, steady carrier rather than a flying clipper ship.

In the early part of the century, she passed to owners in Arendal and she proved to be a profitable ship under the Norwegian flag. She came safely through all the countless perils of the 1914-18 war and in the year 1921 she sailed from Adelaide to Falmouth with a grain cargo in the creditable time of 115 days. After discharging, she went home to Arendal to lie up. She lay idle until the middle of 1922, when her owners decided to send her round the world on a cargo-seeking expedition.

The old ship made a ballast passage to Callao in the poor time of 118 days and was then ordered to the Lobos Islands. There she loaded guano for Charleston, U.S.A. This passage, the last in her long career, was made by way of the Panama Canal and it lasted 37 days.

While at moorings in the American port, the venerable old-timer was sold to American owners for $10,000 and converted to a humble towing barge. And so the world-wide wanderings of this stately old full rigger came to a sudden end.

A striking picture of P.S. "Maid of the Loch" at Ardlui, Loch Lomond

Evolution of the Clyde Fleet

For nearly 150 years steamers have plied the waters of the Clyde. W. A. C. SMITH recalls the difficulties of the immediate post-war era—and goes on to describe the development of this fascinating fleet

THE BEAUTIFUL COAST resorts on the Firth of Clyde owe their development to the steamers plying between them. These vessels can trace their descent to Henry Bill's *Comet* of 1812. In the early days they sailed direct from Glasgow under private owners, but in later years were mainly operated by the rival railway companies from their various railhead piers.

However, as a result of losses in the war and the scrapping of older vessels, the fleet was considerably reduced. . . . Then, after nationalisation, it was proposed to close the smaller piers and concentrate on ferry services with seven new vessels costing £1,000,000. At the end of 1951 this plan was put into operation, but following widespread protests the piers were gradually reopened.

The construction programme was divided into two parts—the first providing for four passenger vessels to be delivered in 1953, and the second for three dual purpose vessels to be ready in 1954. All were to be twin screw diesel driven, an innovation on the Clyde, though the L.N.E.R. had introduced a diesel electric paddle vessel in 1935.

The new passenger vessels—the "Maids"—have the following principal dimensions: length 161.3 ft., breadth 28 ft., depth 8.9 ft., gross tonnage 508. The propelling machinery, giving on trial a speed of approximately 15 knots, comprises two sets of British Polar engines each with six cylinders $9\frac{1}{2}$ in. $\times$ $16\frac{7}{8}$ in. giving 650 b.h.p. at 425 r.p.m. On the steam 4 certificate they carry 627 (summer) and 552 (winter) passengers with 15 crew. On the main deck aft is a cafeteria, and forward an observation lounge with bus type seating. Tripod masts are fitted—the squat funnel is of aluminium—and above the wheelhouse is a passenger landing platform for use at low tide. The noise and vibration from the engines are unpleasant, as is the lack of deck space but on the credit side is the manoeuvrability of the vessels and the high standard of furnishing. A minor point, though much criticised by Clyde steamer lovers, was the choice of names.

The first to go into service was the *Maid of Ashton*, launched on 17 February 1953, by Yarrow & Co. Ltd., Scotstoun. She took up the Gourock-Holy Loch service on May 25. The *Maid of Argyll* was launched the following month, on March 4, at the Pointhouse yard of A. & J. Inglis Ltd. and appeared on the Craigendoran services from June 5. Three weeks later she was followed from the same yard by the *Maid of Skelmorlie* (launched April 2) and the remaining member of the quartet, *Maid of Cumbrae* (which took the water at the Ardrossan Dockyard Ltd., on May 15), made her debut on July 16. Like the preceding vessel she was mainly employed on cruises during the summer, but acting occasionally as

M.V. " Cowal " disembarking vehicles at Gourock. Note gear for raising and lowering car platform

tender to Atlantic liners calling at the Clyde. All take turns on the winter services to the Holy Loch and Millport.

Introduced vehicular ferry

The dual purpose vessels, sometimes referred to as " A.B.C.," are of considerably more interest than the " Maids," as they introduced the long proposed vehicular ferry to the Firth of Clyde. The first, named *Arran*, was launched on 22 September 1953, by Wm. Denny & Bros. Ltd., Dumbarton, and fitted out by the Ailsa Shipbuilding Co. Ltd., Troon. With a raked bow and cruiser stern she resembles a miniature cross-channel steamer but for the lift well and samson posts aft. Leading dimensions are: length 178.8 ft., breadth 35.1 ft., depth 7 ft. 3 in., gross tonnage 568, speed 15½ knots. On a steam 5 certificate she carries 650 passengers and on a steam 4 513 (summer) and 457 (winter), with a crew of 21. Fourteen cars can be carried in addition to cargo containers.

On the promenade deck are a lounge and cafeteria. The main deck forward provides the vehicular accommodation while aft is space for cargo and livestock. An electrically operated lift, with ramps at either side, raises or lowers vehicles between the pier and deck at all stages of the tide. On this platform two manually operated turntables facilitate stowage, and there is another at the forward end of the " garage."

The *Arran* commenced operating between Gourock and Dunoon on 4 January 1954, being relieved on April 9 by the *Cowal*, launched by the Ailsa Co. on January 20. This vessel inaugurated the Wemyss Bay-Rothesay vehicular ferry on October 1 the same year. The third sister *Bute*, had been launched at Troon three days previously and took over this service on 10 December 1954. All are fitted with radar which has proved invaluable for maintaining the winter services. While the *Bute* and *Cowal* now ply to and from the points indicated by their names, the *Arran* has never been regularly employed on the Arran service, as was originally expected. Instead it has been used as a relief vessel. A larger vessel has now been laid down by the Ailsa Co. for this service. Costing £400,000, with delivery early in 1947, it will have a length of about 250 ft. and carry some 1,000 passengers plus 40 cars.

These " mixed traffic " vessels have proved an outstanding success. For instance, on the Wemyss Bay-Rothesay crossing last summer 9,356 cars were carried compared with 450 the previous year, while in August the *Cowal* established a record for the Gourock-Dunoon service with 351 vehicles transported in one day!

All the new vessels are operated by the Caledonian Steam Packet Co. Ltd., which was formed in 1889 as a subsidiary of the Caledonian Railway, and continued as such under the L.M.S. and British Transport Commission.

They fly this concern's flag, which is a yellow pennant with red lion rampant.

Remainder of fleet

The remainder of the fleet comprises the following vessels:—

Name	Builder	Date	Gross tonnage
Duchess of Montrose	Denny	1930	806
Duchess of Hamilton	Harland & Wolff	1932	795
Queen Mary II	Denny	1933	870
Marchioness of Graham	Fairfield	1936	585
Jeanie Deans	Fairfield	1931	814
Caledonia	Denny	1934	624
Jupiter	Fairfield	1937	642
Waverley	Inglis	1946	693
Talisman	Inglis	1935	544
Countess of Breadalbane	Denny	1936	106
Ashton	Denny	1938	38
Leven	Denny	1938	38

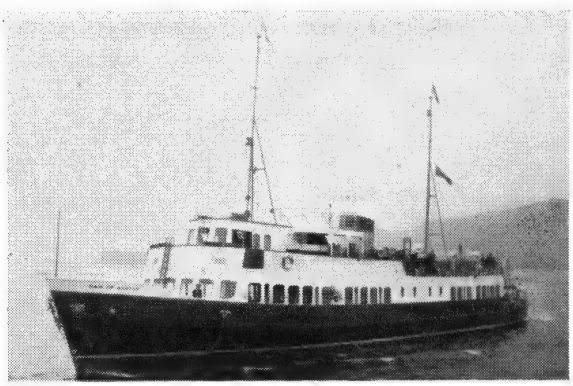
There is also a small cargo steamer named Kildonan.

The only other passenger vessel now serving the Clyde coast is the turbine *Saint Columba*, owned by David MacBrayne Ltd., which is relieved in winter by the diesel electric *Lochfyne*.

Closely associated with the Clyde is the the Loch Lomond service of British Railways and its veteran paddlers have been replaced by the fine paddle steamer *Maid of the Loch*. She was built in the Glasgow Yard of A. & J. Inglis Ltd., but being too large to get up the River Leven to the lock she was dismantled, then transported by rail to the lochside slipway at Balloch where reassembly commenced—in April 1952. She took the water on 5 March 1953, and entered service on May 25. With a length of 193 ft. her gross tonnage is 555, and her propelling machinery, supplied by Rankin & Blackmore Ltd. of Greenock, gives a speed of 14 knots.

She makes a pleasing picture plying the 21 mile long loch with her white hull and yellow funnel silhouetted against the background of green hills.

M.V. " Maid of Ashton " arriving at Gourock from Kilmun



'. . . AND BRISTOL FASHION'

SHIPS IN THE NEWS

AMONG BRISTOL OWNED ships the name *New York City* is one of long tradition—and this has been revived once more in a new steamer of 5,603 tons gross, delivered by John Readhead & Sons Ltd., South Shields, on January 24.

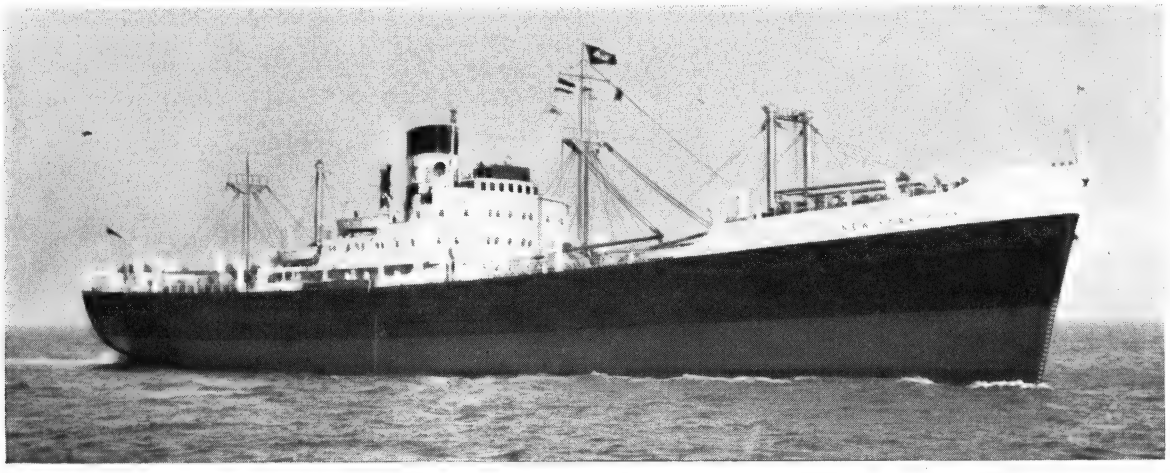
The second of a pair ordered in 1951 by the Bristol City Line—a firm which has recently changed its title to that of Charles Hill of Bristol Ltd.—the *New York City* is similar to the *Gloucester City* completed in September 1954. Specially designed to suit her owners' regular cargo liner service between ports on the Bristol Channel and those along the east coast of the U.S.A. and Canada, she has a d.w. capacity of some 8,500 tons on a draught of 25 ft.—her service speed being 13½ knots. Of open shelter deck type she has a long fo'c'sle, short composite superstructure and five large clear holds. These are served by ten 5-ton, two 10-ton and two 12-ton derricks and steam winches which are of wholly enclosed splash lubrication type. Navigational equipment includes D.F., echo sounding, gyro compass and radar. Four 24-ft. lifeboats are carried under Crescent davits, each with a hand geared lowering winch.

The crew are berthed aft, in two-berth cabins arranged in the 'tween deck space, while officers and five passengers are accommodated amidships, the latter in one single and two double-berth cabins. The propelling machinery consists of a triple expansion engine and Bauer Wach exhaust steam turbine, developing a total of 4,800 i.h.p. Steam is supplied by three oil-fired boilers working under forced draught and at 220 lb. per sq. in.

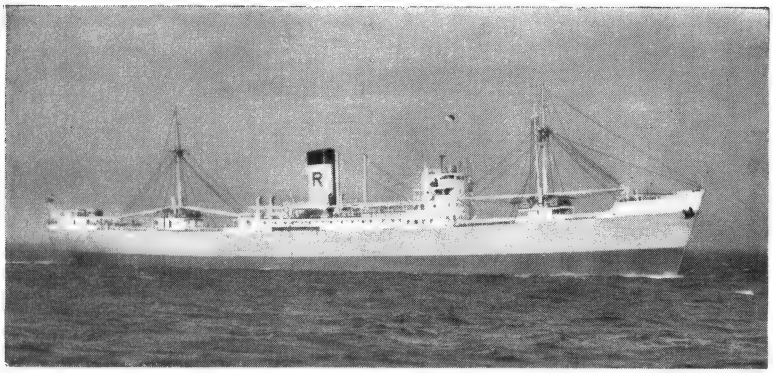
Without going back to the earliest ships to bear the name New York City, it is interesting to compare the new vessel with the two previous ones. The earlier of these was built in 1917 and, as was customary then, she came from her owners' Bristol shipyard. Like the other units of that period she was of very modest size, only 2,669 tons gross and carried some 4,600 tons d.w. on a draught of 23 ft. 6 in. She had a counter stern, split superstructure and five hatches, the last of which was in a short well abaft the mainmast. A most successful ship with a speed of 10/10½ knots, she remained with the Bristol City Line until 1950, when she was sold to Turkey and became the *Kanal*. Resold a year later to Chinese interests, she was then renamed *Willa*.

Up till then Bristol had been the company's terminal, but this imposed great restrictions as to size. After the war it was decided that the service required larger tonnage, even though this necessitated forsaking Bristol Docks in favour of Avonmouth. Most of the post-war purchases were of standard war built type and of these the next *New York City* was again very typical. An 11-knot B type standard ship built as the *Empire Camp* in 1943 by Short Bros., she had a gross tonnage of 7,052 and carried a deadweight of 10,113 tons on a draught of 26 ft. 9 in. Like the rest of this design she had a split superstructure, short topgallant fo'c'sle, and five holds. Bought as something of a stopgap for the Cunard Line's cargo service in 1946 she bore the name *Valacia* until purchased by the Bristol City Line in 1951. Last year she was disposed of to Maclay & McIntyre Ltd. of Glasgow, who have renamed her *Loch Morar*.

The new ship which, it will be noted, is of rather smaller size—but some 2½ knots faster—sailed from Avonmouth on February 9 on her maiden voyage to Halifax.



S.S. "New York City," of 5,603 tons gross, owned by Charles Hill of Bristol Ltd.



M.V. "Reaveley," a smart modern cargo ship of 6,072 tons gross

By Laurence Dunn

Lofty 'tween deck space

THE M.V. *Reaveley*, newest addition to the fleet of Stephens, Sutton, Ltd., replaces the *Riley*, a 20 year old Doxford-built motor ship which was sold at the end of the year. Built at Walker-on-Tyne by the Neptune shipyard of Swan, Hunter, & Wigham Richardson Ltd., for the Whalton Shipping Co. Ltd., the *Reaveley* ran trials on December 29, when she attained a speed of about 15 knots.

She measures 435 ft. in length b.p., 60 ft. in breadth mld. and has a depth mld. to shelter deck of 39 ft. Of open shelter deck type, she has five holds and a deep tank amidships which may be used for cargo or water ballast. The holds have been fitted for the carriage of grain and other bulk cargoes, while forward of amidships the upper deck has no sheer, this giving exceptionally lofty 'tween deck space suitable for the stowage of large items of cargo. Above, on the shelter deck, arrangement has been made for the carriage of deck cargoes, and to facilitate this the winches—which are steam driven—have been placed on masthouses.

The two forward cargo hatches have McGregor steel covers, the others having slab type wood covers. There is one 30-ton derrick by the foremast and two of 10 tons by the mainmast, the others being of 6-ton capacity. There are two 28 ft. aluminium lifeboats, one of them motor driven, and also a small 16-ft. dinghy, this being handled by a cargo derrick.

Seamen and greasers have single berth cabins in a deckhouse aft and in the 'tween decks beneath. Apart from the crew's recreation room which is in the after masthouse, all the rest of the accommodation is in the long midship structure. The main propelling motor—built at the Neptune works—consists of a 4-cylinder Swan Hunter-Doxford oil engine, which develops 4,400 b.h.p. in service at 115 r.p.m.

There are two other tramps in service which have previously borne the name Reaveley. The earlier is the Stag Line's *Begonia*, 4,425 tons gross, a three island type steamer built in 1929 and sold out of the Stephens, Sutton fleet ten years later. The other, a Doxford economy type motorship of 4,998 tons gross, was built in 1940 and remained with them till 1948, when she was sold and renamed *Grenehurst*.

A Canadian Pacific sale

AFTER A LONG period on the sale list the C.P.R. have at last sold their 19,379 ton liner *Empress of Britain*. Now the largest unit of the Grimaldi Line, Genoa, she will be employed on their Central American service.

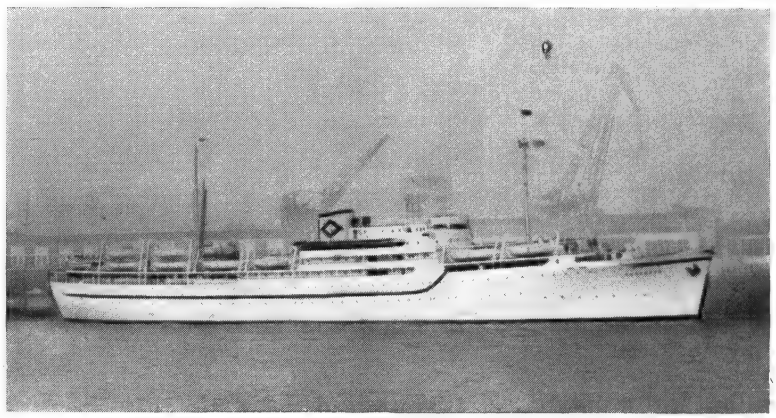
Built as *De Grasse* for the C.G.T. (French Line) by Cammell Laird, she was acquired by the C.P.R. three years ago as a temporary replacement for their burnt-out *Empress of Canada*. Although now elderly she has been well maintained and should prove very useful on her new run.

Emigrant carriers, too

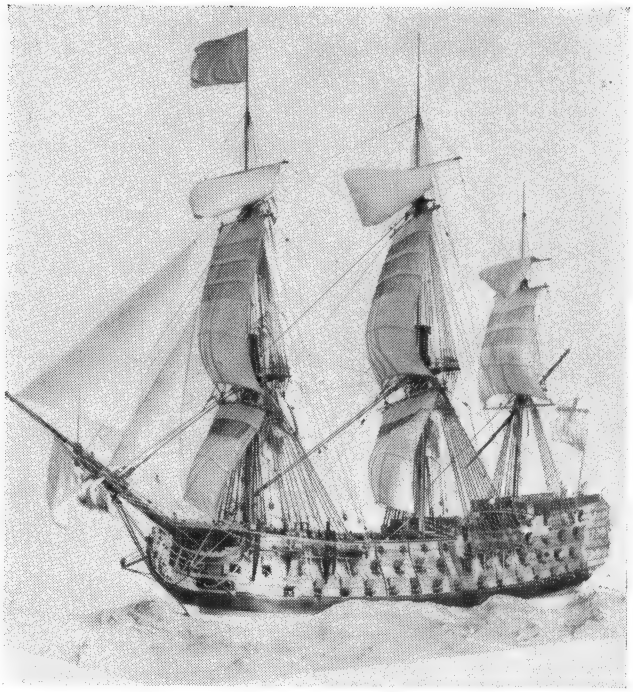
SEVERAL OTHER PASSENGER vessels, smaller, but of very interesting design, have also been offered for sale lately. These include the two-funnelled *North Star*, now a ship of 2,870 tons gross, which was built at Belfast in 1944 as one of the first L.S.T.s., and two Norwegian emigrant carriers. These are the *Skaugum*, a diesel electric ship of 11,626 tons gross, and the five year old m.v. *Skaubryn*, 9,786 tons, both owned by an Oslo firm managed by I. M. Skaugen. The former was laid down in Germany in 1938 as the Hamburg Amerika Line's *Ostmark*. Surrendered in an uncompleted state and sold to Skaugen, her belated completion took place in 1949. Appreciating the great opportunities provided by the emigrant trade her owners then added the *Skaubryn* to this service, a rather smaller Swedish built ship which came from the Oresundsvarvet yard, Landskrona. This vessel measures 440 ft. in length × 57 ft. beam and has accommodation for about 1,000 passengers. A single 9-cylinder Gotaverken built diesel gives her a speed of 16½ knots.

It will be remembered that during the past year or so two other emigrant ships owned by the associated Salen group of companies have changed hands, these being the *Anna Salen* and *Seven Seas*.

M.V. "Skaubryn" (at Bremerhaven), a Swedish passenger vessel of 9,786 tons



An important model of the 'Victory



The builder was one of the chief advisers when the 'Victory' was restored and put in dry dock in 1922—and is a world authority on the old wooden walls

THIS MONTH WE feature what is probably the most impressive scenic ship model in the country. It is a model of H.M.S. *Victory* by Lt.-Col. Harold Wyllie, O.B.E., S.M.A., to the scale of $\frac{3}{16}$ in. = 1 ft., shown as she was when first commissioned. The hull is complete down to the keel, but the model is set in a realistic sea. The original (very complicated) figure head is shown—as are also the open stern galleries. The sails are set and, consistent with the rather turbulent sea, the t'gallant sails and spritsails are being taken in—or being set, with the sea calming down after a gale.

View as from small boat

The ship heels slightly to the breeze, and from a viewpoint near the sea level the impression of the big ship, with her towering masts and bellying sails, is very realistic—just the impression one would get on coming alongside in a small boat.

The model is now in the *Victory* Museum at Portsmouth. Only comparable models the writer has seen are the large waterline models of the four-mast barque *Herzogin Cecilie* and the five-mast ship *Preussen*, which were in the Deutsches Museum, Munich, before the war. These two models were shown with figures, and the realistic appearance of the *Victory* model might have been improved by the inclusion of figures.

In a letter accompanying the photograph Colonel Wyllie says :—

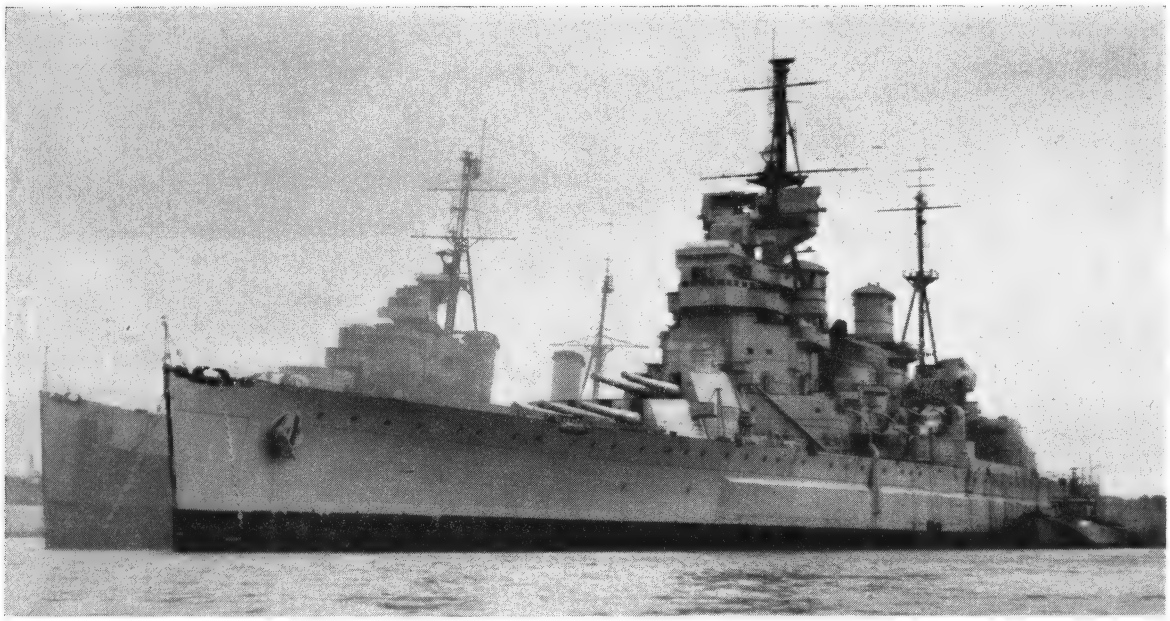
" The model of the *Victory* was a commission from Lord Mountbatten, received in 1930 and completed in 1934. I was assisted in the work by Mr. E. Worsley, model maker, and Captain C. K. Bampton, R.N., miniature wood carver.

Worked on model—and ship

" While rigging this model I was also supervising the rigging of H.M.S. *Victory* herself on behalf of the *Victory* Technical Committee, and the draughtsman on the job would come to consult the model while making the necessary drawings for the Master Riggers' department in the dockyard. It was all most interesting.

" The materials used were hornbeam and boxwood, with yellow pine below gun deck. Hull above gun deck shows all details of construction: beams, knees, carlings, ledges and fitments generally including cables, guns and their gear. Each deck can be lit up electrically. The sea, silver gilt, was lacquered in colour with the crests of waves burnished. Below the sea, which is supported by a frame with pillars, the underwater body of the ship can be seen. The rigging is laid up to scale. The sails are of tussore silk, doped over carefully modelled wax moulds, and the ensign and Admiral's flag thin silver lacquered in colour."

The photograph shows the model before it was finished and set up on its plinth.



H.M.S. " Howe," laid up at Devonport

Naval Photograph Club

BY P. A. VICARY

UNDER THE DRASTIC steps likely to be taken in the streamlining of the Royal Navy, the 35,000 ton battleships *Anson, Howe, King George V* and *Duke of York* are likely to be scrapped unless new arrangements are made for their dispersal and maintenance. *Vanguard* has been reduced to reserve at Devonport.

At present no certain place is foreseen for these ships except perhaps for convoy protection. With their speed, big guns and sea-keeping qualities they could deal with such conventional adversaries as the Sverdlov class cruisers. But battleships are costly to maintain even in reserve and when in commission must carry large ships' companies. Whether Britain, with her other naval commitments, can keep them in reserve much longer is debatable.

Minesweepers for the Indian Navy

Last February two Indian Navy minesweepers were launched from the yards of Camper and Nicholson, and Fleetlands Shipyard at Gosport. Their names are *Karwar* and *Cannanore* respectively, and they are units of the Ton class. The ceremonies symbolising the wedding of ships to the sea were performed by Mrs. Y. D. Gunderia, wife of the High Commissioner for India in the United Kingdom. The vessels were the first to be launched in this country in accordance with Indian tradition. Captain S. N. Kohli, naval adviser to the High Commissioner for India, read in Sanskrit from the Holy Book before Mrs. Gunderia applied her mark, denoting a married woman, to the bows of the ship. With her thumb she placed three daubs of red wax on the bows—the ship being a female and married to the sea—and pressed into them grains of rice, a symbol of good luck. She folded her arms in prayer before placing a garland of daffodils on a hook which was drawn aboard the vessel. Then she cut a white ribbon releasing a coconut which crashed against the bows. Captain Kohli sprinkled the bows with rose water from a silver sprinkler before the vessel slid into the water.

★ ★ ★

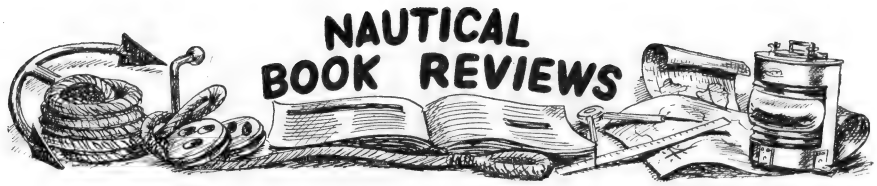
H.M. Tug *Confident* has been launched from Messrs. A. J. Inglis's yard, Glasgow. She is the second tug of a new class of twin screw diesel driven tugs built for H.M. dockyards. The first, *Confiance*, was launched last November. These tugs have an overall length of 154 ft. 9 in. and a loaded displacement of 760 tons.

Netlayer's help for the Theron

H.M.S. *Protector*, armed netlayer, which is operating in the area of the Falkland Island Dependencies, was instrumental in extricating the Canadian sealer *Theron* from the ice in the Weddell Sea. *Theron* is the headquarters ship of the British Antarctic Expedition. Helicopters were flown off from *Protector* and a reconnaissance was made to the north of *Theron*. This survey revealed a passage to the open sea—to which *Theron* was able to proceed once she had freed herself from the ice. During *Protector's* present tour of duty she has visited South Georgia, Deception Island and other dependencies. At South Georgia members of the crew visited the whaling station and witnessed flensing operations; also a Royal Marine platoon, embarked in the ship, landed a rock-climbing party to give them climbing experience under difficult conditions.

★ ★ ★

Part of the Royal Naval Gunnery School at Whale Island, Portsmouth, has been reopened as a guided missiles training school. Officers and ratings now on course will man the first sea-going guided missiles training ship *Girdleness*—she is at present fitting out at Devonport—when she commissions later this year. ⚓



HOW To Draw Merchant Ships. By Leonard W. Sharpe. Published by The Studio Publications, London and New York. Price 5s.

This is No. 37 of the popular Studio "How to Draw" series and is entered as vol. 2, vol. 1 by the same author having been published in 1945. On comparing the two volumes one is impressed by the great development which has taken place in the design of merchant ships during the last decade or so, and also by the necessity for producing an up-to-date version of the original book.

The book has been practically re-written and the great majority of the illustrations are new. Modern designs in funnels, masts and superstructures are all shown, and extreme examples of the streamlining of bridge and funnel structures are included. Useful and interesting details are given of derricks, anchors, winches, davits and similar fittings, all of which will be extremely valuable to the ship modeller. A new section deals with tankers (many fine examples have appeared during recent years).

The general principles of setting out the basic shapes of the ship are explained and illustrated, as are also the various ways in which the subject may be treated—pencil, pen and ink, wash, and so on. Most ship modellers find it necessary to make sketches of ships in the course of their research and they will find this book of the greatest assistance. The non-modeller also will find that a study of the book will give him a greater appreciation of the features of a ship.

THE FAMOUS CLIPPER

The Cutty Sark. By Alan Villiers. Published by Transworld Publishers Ltd., Park Royal Road, London. Price 2s.

This is the third book on this famous ship to be published during recent years, the first being one written by the same author specially for the *Cutty Sark* Preservation Society and published in 1953 and the second by Frank G. G. Carr, C.B.E., for the same society and published in 1954. Naturally, it is not a big book, but in its 96 pages of text and eight of photographs, it gives a very thrilling story of the ship, and the selection of illustrations is excellent. Villiers writes well and it is his best on sailing ships. The illustrations show the ship from her early days down to the present time, and include photographs of her first owner, her first skipper and of Captain Woodget, under whose command she did her finest work.

This is a Corgi Book and like all the books of this popular series is well produced. The cover picture—in full colour—is of the ship herself.

INTERNATIONALLY READ

The Sheet Anchor. Journal of the Wembley Ship Model Society, Vol. 3, No. 3.

This publication is becoming something more than the journal of the Wembley S.M.S.; in fact it is purchased and appreciated by ship modelling readers in many parts of the world. This issue contains the usual quota of practical articles on ship modelling, and the latest transactions of the Guild of Model Shipwrights. The folding plates include drawings of the L and O class submarines by Norman A. Ough and of the 45,000 ton tanker *Tina Onassis.* Other drawings show the rigging and sails of the spritsail barge *Redoubtable* in the series by Mr. S. Warr. The transactions of the G.M.S. describe the building of his Battle class destroyer by Mr. N. M. Peters, with two photographs of the model before completion. Book reviews, news and general items complete an issue which reflects great credit on its editor, Mr. W. O. B. Majer of 81, Paxford Road, North Wembley, Middlesex, from whom copies and further particulars may be obtained.

ALL THE WORLD'S SHIPS

Bock's World Shipping. Published by Christian Wolff Verlag, Flensburg, Germany. 764 pages, 11¾ in. wide, 8¼ in. deep. Price approx. £3 10s.

This is a monumental work, containing a list in alphabetical order of the names of all the ships of the world of over 1,000 gross tons. Naturally, such a list is complete only at the time it was compiled. But nevertheless it will be extremely valuable. Particulars of each ship's tonnage, dimensions speed, owner, builder and date of building are given in tabular form. In addition there are 268 pages of drawings, illustrating about 70 per cent. of the ships listed. These are all very carefully drawn and to a uniform scale, which simplifies comparison. The hull colouring and funnel marking is suggested by the tint used. Leading particulars of the ship are given under each drawing. The final section of the book gives the names of all ship owners and ship owning companies with a list of the ships they own.

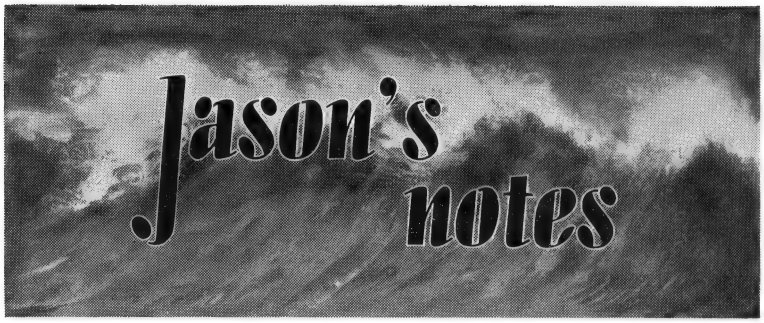
The German text is accompanied throughout with an English translation. Dimensions are given in both metres and feet, and tonnage is normally given in metric tons (1,000 kilograms). The book is very well produced, on good paper, and is finished in a strong binding with cloth boards. Such a convenient book of reference would be a great asset to anyone having business with ships and the sea in any form.

Congratulations !

The Bulletin. Published by the Thames Shiplovers' and Ship Model Society.

Since its formation this society has published an annual. At the commencement of the present season it was decided to replace this with a quarterly production under the title "The Bulletin." This was due to the departure of the founder and secretary, Mr. H. V. Evans, on 19 January 1955, for Australia. The first number of the new production is now before us and we must congratulate the editor, Mr. George W. Howe, on a very excellent piece of work. Of necessity this first issue is somewhat of a compromise, the opening section being a number of the secretary's monthly letters written by Mr. H. V. Evans before he left for Australia. From then onward the bulletin is in the form of a running report of the activities of the society, interspersed with news items of shipping interest. Reports of the lectures are given in detail, and the summer activities of the society, including the sailing rally at the Round Pond and visits to ships, are described. Two pages of photographs of the models in action at the rally are a pleasant addition to the contents.

Revival of a famous pre-war column — about ship modellers, societies and clubs, ships and those who sail them



ALTHOUGH IT WAS mighty cold I dropped in to see the members of the Bristol Ship Model Club at their last meeting. A flourishing group, the club has been going since 1937. At the time of my visit they had suffered severe casualties through illness—and death—but nevertheless they put on a good show at short notice.

The speaker quite casually said that he found silver soldering easy. The excellent coach painter's finish on his model—which was present for demonstration purposes—was, in the opinion of the speaker, within everybody's reach, with the exercise of ordinary care. Such remarks were "just asking for it" and I was not surprised at the end of the meeting to find that he was booked for two further talks.

Ancient Bristol

IT IS NOT always realised that Sebastian Cabot reached the mainland of North America from Bristol before Christopher Columbus, nor that London as a seaport was the only serious challenger to Bristol's greatness for several centuries. The ship models in the museum reflect the zenith of the city's greatness in the 17th and 18th centuries. I was fortunate to be shown round by Norman Poole, who has restored many of these models. The museum authorities are never hesitant in securing the services and advice of both the Bristol Ship Model Club and the Bristol Ship Lovers' Society.

R.L.S. and Daniel Defoe

MENTION OF BRISTOL reminds me of my visit to that famous old inn "The Llandoger Trow" built at the time of the Great Plague and Fire of London—nearly 300 years ago. Robert Louis Stevenson laid the opening scenes of his "Treasure Island" at this very inn . . . and from a wharf a few yards away sailed the *Hispaniola* on her famous voyage with Jim Hawkins and Long John Silver. It was here that Daniel Defoe met Alexander Selkirk, who years before had been marooned on Juan Fernandez island in the South Pacific. His experiences formed the foundations of that famous yarn "Robinson Crusoe." The name of the inn itself originates from a Captain Hawkins, its first owner, who made his money trading to a fishing village on the River Wye. The wharves with their modern ships are still close by and, a bus ride away, huge trans-ocean vessels use the port of Avonmouth.

The Sheffield exhibition

AS YOU READ these notes members are putting the finishing touches to their annual exhibition which opens on April 4. As usual the ship modellers are joining forces with the engineers and the aero modellers. There is now a strong following for power boats in the Sheffield Ship Model Society: at least one regatta is held in the summer. Last year the president, Mr. Wood-Smith, told me that their open-air event was ruined by paper bags, ice cream wrappers, cigarette cartons and the like fouling the propellers and steering gear. The radio control part of the programme was spoiled completely. I shall be glad to hear from others who have suffered this annoyance—and how they cured it! A report of the exhibition will appear next month.

An auction tip

IS YOUR SOCIETY short of money? If so, do the same as Wembley. Hold an auction of all those things that are not wanted. It achieves four things: 1 It clears out old lumber. 2 Somebody wants it and will pay for it. 3 Such funds go to the society. 4 The wives will unanimously agree it is the first sensible thing the society has done! Seriously, though, you may be interested in these items and the prices paid. A light toffee hammer opened at ½d. and was sold for 9d.; bradawls and screwdrivers were around 1s. apiece; a parcel of lancewood 2s.; five volumes of the pre-war SHIPS AND SHIP MODELS 22s. 6d. The major titbit was a ⅛ h.p. motor which started at half a guinea and went to 50s. Well, secretaries, what about making provision for an auction in next year's syllabus? But do get *the wives on your side*!

Hammersmith strives on

UNDER THE GUIDANCE of Mr. Gay this society continue to make steady progress. They have more than half a dozen exhibitions a year. Most important is the friendship with the Wembley society. When the Hammersmith chairman was on a visit to the Glasgow society he brought back with him three score questions suitable for quiz meetings. So these two societies meet and fight it out in a quiz. I think it is quite a good idea for a couple of societies to meet in this manner, especially when the questions have been supplied by a third society. Not all of the questions I saw are concerned purely with ship modelling, but all had a bearing on ships and the sea.

A stately headquarters

THE Greenwich Ship Model Society is fortunate in being able to meet in Charlton House, a magnificent 300 year old mansion. It is full of fine paintings, prints and etchings. Many of these deal with the Thames and its traffic for the past three centuries. Mr. Stock, the chairman, told me that he spends hours looking at Thames-side scenes depicted in the prints. He specialises in the barges and hoys of other days. Equally important are the views of Mr. Honey who, in a paper to the Thames Shiplovers' Society, stressed the importance of symmetrical proportions in a ship's hull and rigging.

Ships and Ship Models Mailboat

● **Letters of general interest on maritime matters are welcomed. A nom de plume may be used if desired, but the name and address of the sender must accompany the letter. The Editor does not accept responsibility for the views expressed by correspondents**

TURRET SHIPS

SIR,—I suggest that the heading "How many turret ships?" given to Mr. S. E. Teasdale's letter in your issue of January 1956 was misleading. Your correspondent's "disappointment" at finding in my article "The turret ship" (SHIPS AND SHIP MODELS, APRIL 1955) no infortion as to the number of turret ships still in existence was ill-founded.

In point of fact it was stated in the third paragraph of my article that: "Lloyd's Register shows only seven turrets in service. Of these, only one is under the British flag and at least one is thought to have been broken up in the interim." This information was, of course, based on the 1954 Register. Because of the restricted space you could allot me, I was unable to give details of these gallant survivors with the single exception of the *Turret Cape*, built by Wm. Doxford & Sons in 1895 and, at the time of compiling my facts, owned by Colonial Steamships Ltd. of Toronto, Ontario, and sailing under the name of *Walter Inkster*.

Lloyd's Register for 1955 shows the following six turrets still in service:—

Walter Inkster ex-*Barge*—'41 ex-*Turret Cape*—'48 ex-*Sunchief*—'49

Felguera ex-*Upo-Mendi*—'40 ex-*Mont Jarindo*—'52

Hermann Fritzen ex-*Werner Kunstmann*—'38 ex-*Efstathios* ex-*Clearway* ex-*Nonsuch*

Nuestra Senora del Carmen ex-*Begona No.* 4 ex-*Diciembra*

Uru ex-*Anneliese* ex-*Pearlmead*

Vindo ex-*Sarimner*—'42 ex-*Inland*—'34.

Regarding Mr. Teasdale's enquiry about an unknown turret vessel which, visiting the Wear in 1954 to load coal for a Swedish port, grounded on arrival and became a wreck, no amount of research at Lloyd's has thrown any light on this supposed turret casualty. The shipping editor's office (Lloyd's) has looked through the whole year's casualties without result.

Judging by your correspondence columns, and the many letters I have received following my article on the turret ships, it is clear that the design still holds much of interest to many. It may be therefore that you can spare space with this letter to reproduce the photograph (acknowledgments to Mr. Harry Stewart of Preston) of the s.s. *Garryvale*. The *Garryvale* was built in 1907 with a gross register of 3,908 (net 2,455), original owners—Vale S.S. Co. (A. Crawford, Barr & Co.), British flag. Later owned by Rederi A/B, Finnish flag, as the *Kristian Hansen*, she went ashore on 30 January 1939, one mile S.E. South Gare, River Tees, was refloated next day, arrived Middlesbrough and sold to T. W. Ward for breaking up. At time of casualty her gross tonnage was 4,067, net 3,903.

Cannes. JOHN W. HARRIES.

TAKING THE LINES . . .

SIR,—In the January issue you published an article on taking the lines off a vessel, followed in February by one on getting them on to the drawing board. The careful and accurate measurements taken off the vessel need to be accurately transferred to the drawing and the method described will not do it. The keel on the chocks in the dry dock is the base line and the sections must stand as they are vertical. The waterlines of the bread and butter work must be square to the vertical sections. Now supposing a vessel is 100 ft. long, 12 ft. draft aft, 7 ft. forward, bring it to an even keel by lowering the stem 60 in. Our sections on deck now plumbed to keel will all move forward some $7\frac{1}{2}$ in. as our vessel is 12 ft. deep rail to keel amidship. This will, if we work to the moulds, make the bow fuller than the vessel and the reverse happens in the aft body which will be finer. Most wooden vessels have frames square to the designed W.L. although some steel builders have frames square to the keel.

Ipswich. SHIPBUILDER.

● *We do not agree with the final sentence of our correspondent's letter. In most ships, wooden or steel, the frames are built at right angles to the keel. The hull lines may be drawn square with the base of the keel or square with the L.W.L. of the vessel. Both methods are used. In obtaining the sections of a hull—which is on a slipway—by means of a plumbline and then using them for the frames, there will be, as "Shipbuilder" suggests, a slight discrepancy. But it will be very slight, especially if the sections are located on the deck and not on the keel, and may safely be ignored.—Ed.*

NOW POZARICA

SIR,—We were interested to read in your March issue a letter from Mr. O. A. Good with reference to our vessel m.s. *Pozarica*.

She was formerly known as the *Empire Dove* and was renamed by us after purchase. The vessel was built at Bolnes by Pot N.V. Sheeps in 1941, and has a speed of $14\frac{1}{2}$ knots with a double acting M.A.N. engine, of 3,800 b.h.p.

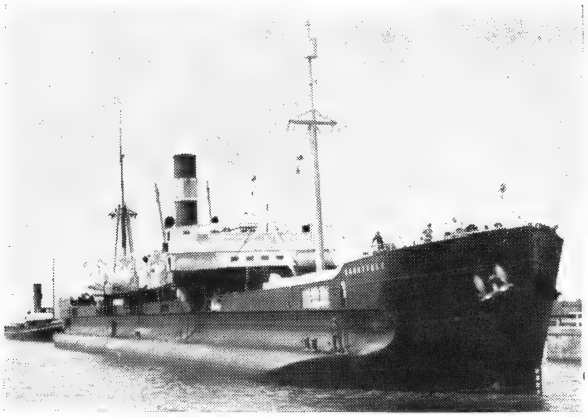
Summer deadweight tonnage is 3,017 tons and her dimensions are:—

Length overall	360 ft.
Breadth	48 ft.
Draft	19 ft.

She has accommodation for 12 passengers in double and single berth rooms, and is a very popular unit of our fleet, at present sailing out of Liverpool.

A. L. BILLINGTON (director), Mac Andrews & Co. Ltd.

London, E.C.3.



A view of the s.s. "Garryvale's" starboard harbour deck (See first letter)

THE ART OF SAILING UPRIGHT

SIR,—In his article under the above title, Lt.-Col. C. E. Bowden develops his theory that aeroplane wings and yacht keels are analogous.

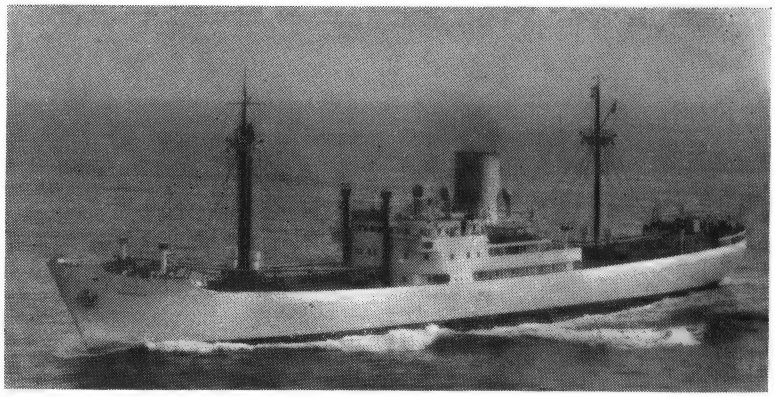
May I point out that in the old Percival Marshall handbook on "Model Sailing Yachts," originally published about 1912 I believe, Mr. W. J. Daniels states that if the fin is being dragged other than parallel to the yacht's axis great resistance is set up. If the reader will give the matter a moment's thought, he will see that this entirely explains the whole of the so-called "lift-drag" business without reference to aerofoils and hydrofoils ! It also accounts for a well-balanced boat being a little ardent when her sail-plan is placed to best advantage over the hull, so that the two sails can be trimmed at equal angles to the centreline of the hull. This in turn accounts entirely for a boat doing her best to windward when trimmed to require 2-3 degrees of helm to prevent her luffing up. The reason this advantage vanishes when this helm angle is exceeded is simply that the rudder acts as a brake.

It is, however, when the colonel gets on to the subject of aspect ratios that he strains our credulity most. I notice that he marks points on the sails and on the lateral plane as being "centres of pressure," Now we all know that the calculated C.E. and C.L.R. are not the centres of either wind pressure or lateral pressure, but has our author found any method to calculate where the true C.P. falls ? I much doubt whether either of the C.P. sails would be as far above deck as he places them. Nor do I see why C.P. of the deeper craft is proportionately lower than that of the shallower as regards the lateral plane. Incidentally neither rig is particularly efficient, particularly the beamy boat's which has a tiny jib with a very low hoist, that would deprive the mainsail of most of the beneficial "slot effect."

Now the accepted theories of stability take no account of lateral pressure. Summarised briefly, a yacht heels to the point when the righting moment equals the heeling moment, and the pivot point is the boat's M/C. A deep, narrow boat has a low M/C at small angles of heel, but it rises as the angle of heel increases. A shallow, beamy craft has a high M/C at small angles of heel, but soon reaches a point of heel when the M/C crops rapidly. The righting moment is the displacement multiplied by the righting arm. Hence the deep-keeler must have greater sail carrying power.

If we read what the colonel says at the top of his diagram, we see that the lower aspect ratio, shallow-draught boat is in his opinion the better to windward. On the other hand, at the bottom he states that high aspect ratio is efficient on the wind. What is the real truth ? Wind tunnel experiments have proved that on the wind an aspect ratio of as high as 9 to 1 can be used to advantage, but for running best results are obtained with 1 to 1. A medium ratio would then appear to be 5 to 1 to have the best all-round results. Practical considerations do not permit our going to these extremes, but 4 to 1 is quite common, and in the hands of a first-class skipper is very efficient, though rather less is generally advisable for a number of reasons. Nor must we forget that when we set the spinnaker, we bring down the aspect ratio very considerably, particularly as the sailplan is almost square before the wind, when the yacht is running.

London, N.3. H. B. TUCKER.



"Pozarica"—ex "Empire Dove"—from the air

"NO" TO LIME

SIR,—It has come to my notice that my opinions regarding the qualities of lime wood as a suitable timber for miniature modelling expressed in my book "Shipbuilding in Miniature" have created something of a furore in certain ship modelling circles.

The chairman of one ship model society felt so strongly about this that he kindly sent me samples of his lime to try. This I duly did, and replied to him that while the pieces he sent me were superior to mine I still had no high opinion of this timber—indeed, that it was not the wood for me.

The courtesy of a reply was not vouchsafed me, but I now understand that this modeller has, in public, ascribed to me a subsequent liking for this timber, thereby implying that the opinions in my book were ill-considered.

This is not so. I have *not* altered my opinion, I still do *not* like lime. We all have every right to express our opinions; I just prefer not to have mine expressed for me—inaccurately.

The more careful reader of my book will see that I took some pains to make clear that these were my own personal opinions, and if he applies the advice given on page 18 to lime, he will be able to form his own.

Barton-on-Sea, Hants. DONALD MCNARRY.

WATER JETS

SIR,—Being a keen ship modeller and reader of your magazine since MODEL SHIPS AND POWER BOAT days, I thought the following information might be of interest to readers.

In the January issue you report a certain Mr. D. T. Oxton has produced a craft propelled by water jet.

This method of propulsion for marine craft is by no means new. There are two distinct references to it in naval history.

In 1789 an American gentleman from Virginia (by the name of Runsey) built a craft propelled by a jet of water forced by a modified type of steam pump through a hole in the boat's stern. Later—in 1839—an Englishman named Ruthven patented the device.

The Navy was so impressed by a craft he built and operated on the Thames that they ordered the building of an armoured gunboat, *Water-Witch*.

This craft was 162 ft. long 30 ft. beam, and had installed Ruthven's system for jet propulsion. A 775 h.p. engine of three cylinders, drove a 12 bladed pump, 14 ft. in diameter. On trials in 1867 the craft did 9.2 knots—but although a definite sucess no further craft were built for the Navy, and I can find no further mention of *Water-Witch*.

Winchester, Hants. R. LARN.

● *We noticed an interesting example of jet propulsion on the stand of The Rowhedge Ironworks Co. Ltd. at the National Boat Exhibition.—Ed.*

News from the clubs

MODEL YACHTING ASSOCIATION

The dates for the M.Y.A. Championships for 1956 are as follows:

" M " class at Dovercourt from May 19 to 21.
10 raters at Fleetwood from July 9 to 14.
" A " class at Gosport from August 5 to 12.
36 in. " R " class at Hove on September 8 and 9.
6 metre not yet fixed.

Hon. Racing Secretary: M. FAIRBROTHER, 52, Alderbrook Road, Solihull, Warwickshire.

INTERNATIONAL R.C. MODELS SOCIETY

The annual contests for radio controlled model boats will take place this year at the Valley Pool, Bournville, Birmingham, on Monday and Tuesday, August 6 and 7. Contests will be arranged for both yachts and power boats. Further particulars from H. CROUCHER, Hon. Competition Secretary, 27, St. John's Road, Sparkhill, Birmingham 11.

POOLE M.Y. AND P.B. CLUB

This year the annual radio regatta has been arranged for Saturday and Sunday, June 23 and 24. A big programme has been planned, full particulars of which may be obtained from the Hon Secretary: W. E. L. PERRETT, 46, Cranbrook Road, Parkstone, Dorset.

Y.M. 6m. O.A. AND S. LONDON M.Y.C.

The following events have been arranged for April:

April 2	10 R Surbiton Shield (open)	Starting 11 a.m.
,, 8	A class Handicap Race	,, 2 p.m.
,, 22	A class St. George Trophy	,, 11 a.m.
,, 29	Y.M. 6m. O.A. annual general meeting	,, 11 a.m.

Hon. Secretary (Y.M. 6m. O.A.): H. D. HATFIELD, 132, Westbourne Grove, Westcliffe-on-Sea, Essex.

THAMES SHIPLOVERS' AND SHIP MODEL SOCIETY

At the Model Makers meeting in the East Holborn Library on Friday, April 13, Mr. Basil Lavis will talk on " the ships models to be seen at the National Maritime Museum." At the meeting in the Baltic Exchange on Friday, April 27, Mr. Wm. Jones of the P.L.A. will show the film " Waters of Time." Hon. Secretary: ERIC C. RANDALL, 24, Winter Avenue, East Ham, London, E.6.

METROPOLITAN SHIP MODEL SOCIETIES

The next meeting of the secretaries of the above will be held at 98, Charing Cross Road, at 7.30 p.m. on Wednesday, April 25. W. GAY, Hon. Representative, 351, Kingshill Avenue, Hayes, Middlesex.

HAMMERSMITH SHIP MODEL SOCIETY

The meetings for April are as follows:

April 3, Annual Miniature Competition.

April 17, " Construction of Sailing Models," by F. Pearson and A. Leach.

Hon. Secretary: H. I. COSTER, 98, Craven Park, Harlesden, N.W.10.

WORLD SHIP SOCIETY BELFAST BRANCH

The April meeting will consist of a discussion followed by the annual general meeting. This will be held on Tuesday, April 17, at 7.45 p.m. in the Canadian Room of the Overseas League, Wellington Place, Belfast. Hon. Secretary: B. L. DEVENISH-MEARES, 30, Wandsworth Road, Belmont, Belfast.

EAST LONDON SHIP MODEL SOCIETY

Will correspondents please note that the post of Hon. Secretary of this society has been taken over by C. P. MARTIN of 22, Medhurst Road, Bow, E.3, who will be pleased to supply details to prospective members.

WEMBLEY SHIP MODEL SOCIETY

The meetings for April are as follows:

April 9, Members' Night, Four short talks.

April 23, " The Built-up Ship Model," by R. J. Collins.

Hon. Secretary: C. SESTON, 8, Albert Road, Southall, Middlesex.

THE BIRMINGHAM SHIP MODEL SOCIETY

The April meeting of this society will be held in the society's headquarters on Friday, April 20, when E. J. Diggins will speak on " Bristol Channel Lightships."

Hon. Secretary: CAPT. F. J. MARSDEN, 15, Cartland Road, Birmingham 14.

BRISTOL SHIPLOVERS' SOCIETY

The meetings for April are as follows:

April 3, " Tramp Ships of Forty Years Ago," Mr. J. Claridge.

April 17, Musical Evening arranged by Mr. Frank Gardner.

Hon. Secretary: F. G. WATTS, 7, Fifth Avenue, Northville, Bristol 7.

BRISTOL SHIP MODEL CLUB

Owing to the recent death of Captain H. S. Watkins, who was booked to speak on April 10, special arrangements have had to be made for this month's meeting.

Hon. Secretary: A. RALLS, 8, Kenmore Crescent, Filton, Bristol. Telephone: Filton 2148.

CLYDE SHIPLOVERS' AND MODEL MAKERS' SOCIETY

The annual general meeting will be held on April 9, when office bearers for the 1956-7 session will be elected. Hon. Secretary: DAVID I. CALDERWOOD, C.A., 89, Gibson Street, Hillhead, Glasgow, W.2.

SHEFFIELD SHIP MODEL SOCIETY

The three major modelling societies in Sheffield—Society of Aeromodellers, Experimental and Model Engineers, and the Ship Model Society—have banded together to hold a combined Exhibition at the Central Technical School, Leopold Street, from April 4 to 7 inclusive.

LIVERPOOL NAUTICAL RESEARCH SOCIETY

At the April meeting of this society, which will be held on Thursday, April 12, Mr. R. W. Bathe of the Science Museum, London, will read a paper entitled " The Shipping Galleries of the Science Museum." The meeting will be held on board *Landfall* in Canning Dock and will commence at the usual time.

Chairman: R. B. SUMMERFIELD, 28, Exchange Street East, Liverpool 2.

NORFOLK NAUTICAL RESEARCH SOCIETY

At the April meeting of this society, Comdr. D. V. Sutton, R.N.R. (Harbourmaster, Great Yarmouth), will give a talk based on his experiences. The date is Tuesday, April 10, at 7.30 p.m. and the venue: The Sailors' Home, 25, Marine Parade, Great Yarmouth.

Hon. Secretary: JOHN F. C. MILLS, Opie House, Castle Meadow, Norwich. Telephone: Norwich 23241.

READERS' QUERIES • • •

Colouring Wanted

In the course of research into the colour-scheme of the German tramp steamer *Falkenstein*, I have not been able to discover the colour or design of the emblem of the "Safmarine" Co., who chartered the ship in 1954.

The ship, owned by Robert Bornhofen, of Hamburg, was the subject of an article, "Ships in the news," which appeared in SHIPS AND SHIP MODELS (January 1954), and was depicted in a photograph in the article wearing "Safmarine" colours.

If a reader could please tell me the colour and design of the "Safmarine" emblem, I would be very pleased. I am making a model of the ship, which of course, necessitates correct colouring.

C. WINTERTON, Cambridge.

Banana Ship

I am writing in the hope that one of your readers might be able to supply me with any details of the Elders & Fyffes' banana ship *Camito* (1915).

I wish to construct a 1/32 in. scale miniature of her and then, in the not too distant future, a $\frac{1}{8}$ in. scale radio controlled working model. I have in my possession a copy of MODEL SHIPS AND POWER BOATS, for June 1950, which gives an article on her by J. E. Jane, and was wondering where he obtained his information.

I also have four very good photographs of her taken by my father who was the first wireless operator on board. I should be very pleased to lend the negatives to anyone interested.

A. D. ROBERTS, Eltham, London, S.E.9.

Rigging Problem

I wonder if any reader of SHIPS AND SHIP MODELS can help me with this problem:—

In the rigging of a sailing ship's yards do the clew-lines, sheets, etc., of the royal yards pass behind or in front of the lifts of the top gallant yards and likewise the clew-lines, sheets, etc., of the upper tops'l yards with the lifts of the lower yards? I find that because the distance the yards are fixed in front of their masts and owing to the lifts having a slight backward slant all the clew-lines and sheets cannot take a straight lead down the mast but would have to lead back quite an angle until clear of the lifts.

I may add that although I have dozens of photographs at my disposal and also Mr. H. Underhill's splendid book on masting and rigging, this is not clear to me. Mr. Underhill, for instance, states that after passing through their respective blocks the clew-lines or sheets lead down the mast through fairleads in the top but does not show any sketch illustrating this.

C. TURNER, Headington, Oxford.

Theron Dimensions

Can any reader supply me with the following information:—

The overall length, breadth and draught of the sealer *Theron* recently returned from the Antarctic.

S. M. BANKS, Gillingham, Kent.

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WANTED. World War I period wooden ship identification models by Boucher of New York, 1″ = 100′ scale. Japanese made wooden naval identification models, World War II period, 1″ = 100′ scale. Viking metal model liners and warships (German-pre-war manufacture) 1″ = 1,250″ scale, especially want harbour set, complete, offer £3. British naval identification models, 1″ = 100′—all navies and merchant marines (by Bassett-Lowke, Stewart-Reidpath, Palatial Mfg., etc.). Merchant ships and liners, 1″ = 100′ scale: Landing Craft, 1″ = 50′ scale by Bassett-Lowke. Write and describe for my offer. Naval Intelligence Ship Identification manuals—World Wars I or II. These six editions, only: *Jane's Fighting Ships*, 1919 edition; Jane's *All the World's Aircraft*, 1919 edition; Thetford's *Camouflage of* 1914-18 *Aircraft*; Gröner's *Die Handelsflotten der Welt*, 1942/43 edition; Weyer's *Flottentaschenbuch*, 1942/43 edition; Clowes' *Naval Pocket-Book*, 1914 edition. Excellent prices paid.—DON SCHROTH, P.O. Box 91, Blue Island, Illinois, U.S.A.

NEARLY 50 NEW NAMES added to our ship photo lists. S.A.E.—CAMAS, 10, Mark Street, Wallasey.

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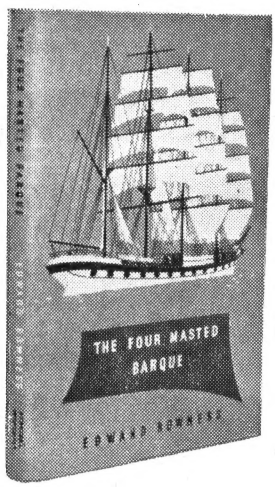

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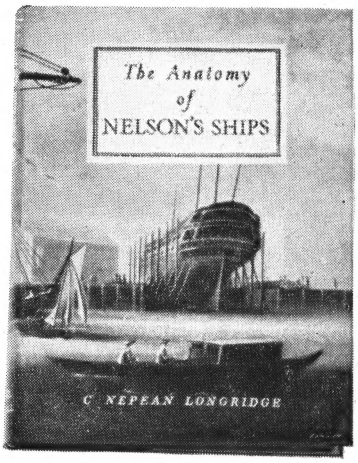

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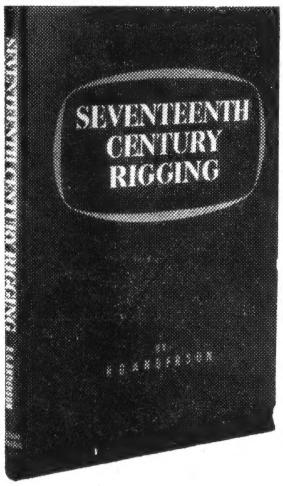

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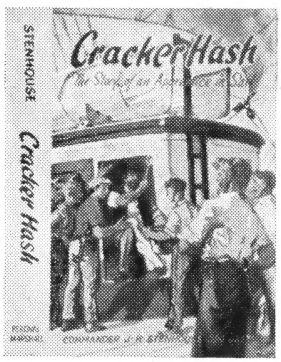

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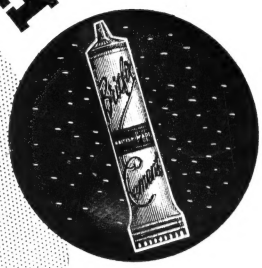

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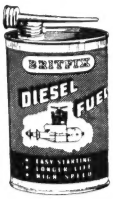

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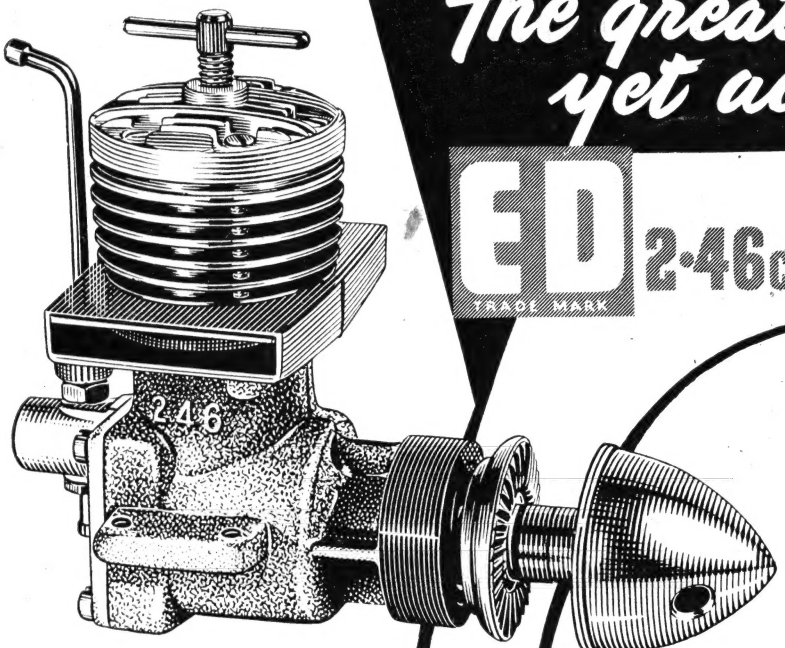

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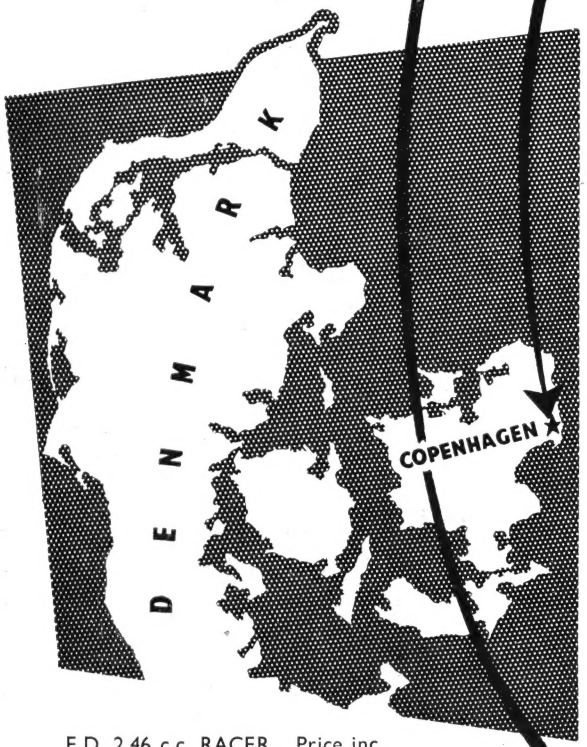

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